DSC-S70

SERVICE MANUAL

Level 1

Ver 1.0 2000. 03

AEP Model
UK Model

Self Diagnosis Supported model

Cyber-shot Digital Still Camera

InfoLITHIUM M

MEMORY STICK

SPECIFICATIONS

System

Image device
1/1.8 type color CCD

Lens
3× zoom lens
f = 7 – 21 mm
(34 – 102 mm when converted into a 35 mm still camera)
F = 2.0 – 2.5

Exposure control
Automatic exposure

White balance
Automatic, Indoor, Outdoor, Hold

Data system
Movie: MPEG1
Still: JPEG, GIF (in TEXT mode), TIFF
Audio with still image: MPEG1 (Monaural)

Recording medium
"Memory Stick"

Flash
Recommended recording distance:
11 7/8 inches to 8 1/4 feet (0.3 m to 2.5 m)

Output connector

A/V OUT (Monaural)
Minijack
Video: 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance: 2.2 kΩ

Digital I/O (USB)
Special minijack

External flash jack
Minijack

LCD screen

Used LCD panel
2 type TFT (Thin Film Transistor active matrix) drive

Total number of dots
123 200 (560×220) dots

General

Used battery pack
NP-FM50

Power requirements
7.2 V

Power consumption (during recording)
3.9 W

Operation temperature
32˚F to 104˚F
(0˚C to 40˚C)

Storage temperature
–4˚F to +140˚F
(–20˚C to +60˚C)

Maximum dimensions
4 5/8×2 7/8×2 5/8 inches
(117×71×64 mm) (w/h/d)

Mass
Approx. 15 oz (423 g) (including battery pack NP-FM50, "Memory Stick," shoulder strap and lens cap etc.)

Built-in microphone
Electret condenser microphone

Built-in speaker
Dynamic speaker

AC-L10 AC power adaptor

Power requirements
100 to 240 V AC, 50/60 Hz

Rated output voltage
DC 8.4 V, 1.5 A in operating mode

Operation temperature
32˚F to 104˚F (0˚C to 40˚C)

Storage temperature
–4˚F to +140˚F
(–20˚C to +60˚C)

Maximum dimensions
5×1 9/16×2 1/2 inches
(125×39×62 mm) (w/h/d)

Mass
Approx. 10 oz (280 g)

NP-FM50 battery pack

Used battery
Lithium ion battery

Maximum voltage
DC 8.4 V

Nominal voltage
DC 7.2 V

Capacity
8.5 Wh (1 180 mAh)

Design and specifications are subject to change without notice.

DIGITAL STILL CAMERA

SONY®

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270 ˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

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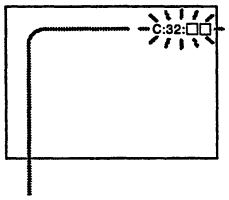
[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

- C: □□
  You can reverse the camera malfunction yourself. (However, contact your Sony dealer or local authorized Sony service facility when you cannot recover from the camera malfunction.)
- E: □□
  Contact your Sony dealer or local authorized Sony service facility.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:□□	Turn the power off and on again.	Trouble with hardware.	SYSTEM ERROR
C:13:□□	Format the "Memory stick".	Unformatted memory stick is inserted.	FORMAT ERROR
	Insert a new "Memory Stick".	Memory stick is broken.	MEMORY STICK ERROR
E:61:□□ *1	Checking of lens drive circuit.	When failed in the focus and zoom initialization.	—
E:91:□□	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged. *2	

Note: The error code is cleared if the battery is removed, except detective flash, unit.

*1: The error display is given in two ways.

*2: When the flash charging failed, Page : D, Address: 67. Data: 04 are written.
After repair, be sure to write Page: D, address: 67. Data: 00.

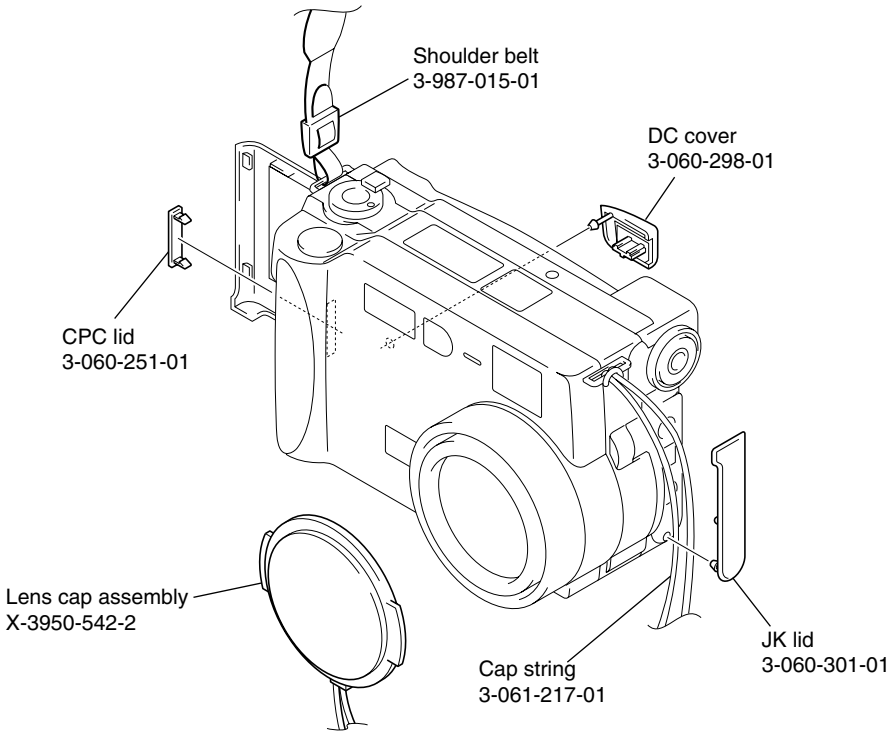
1. MAIN PARTS

Note:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The parts numbers of such as a cabinet are also appeared in this section. Refer to the parts number mentioned below the name of parts to order.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

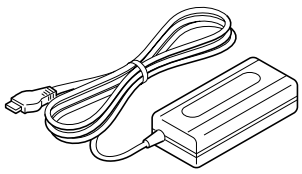
1. ORNAMENTAL PARTS



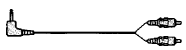
Checking supplied accessories.

Check that the following accessories are supplied with your digital still camera.

Power cord (1)
⚠ 1-769-608-11 (AEP)
⚠ 1-783-374-11 (UK)



AC adaptor (1)
⚠ 1-475-599-11

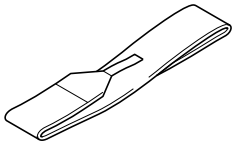


AV connecting cable (1.5m) (1)
1-783-738-31

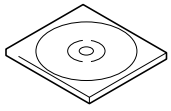
USB cable (1)
1-792-623-11

Lens cap assembly (1)
X-3950-542-2

Cap string (1)
3-061-217-01



Shoulder belt (S) (1)
3-987-015-01



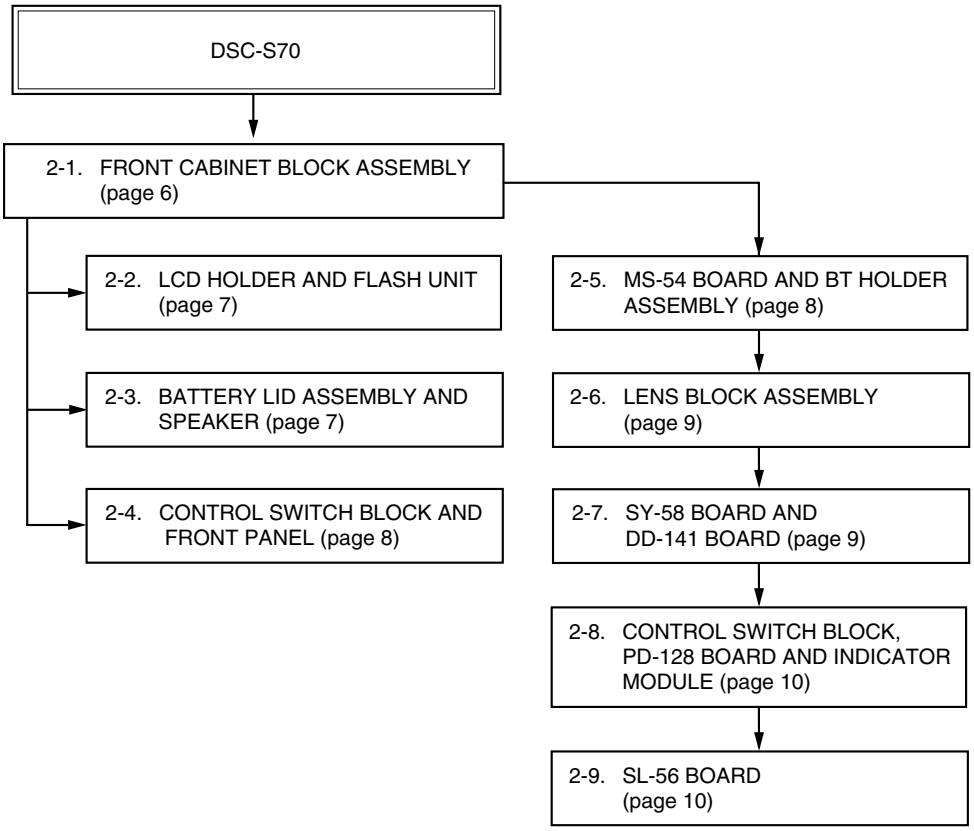
Bundle soft (2000) (1)
3-060-716-01

Other accessories

3-060-522-11	MANUAL, INSTRUCTION (ENGLISH)
3-060-522-21	MANUAL, INSTRUCTION (FRENCH, GERMAN) (AEP)
3-060-522-31	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE) (AEP)
3-060-522-41	MANUAL, INSTRUCTION (ITALIAN, DUTCH) (AEP)
3-060-522-61	MANUAL, INSTRUCTION (RUSSIAN, SWEDISH) (AEP)

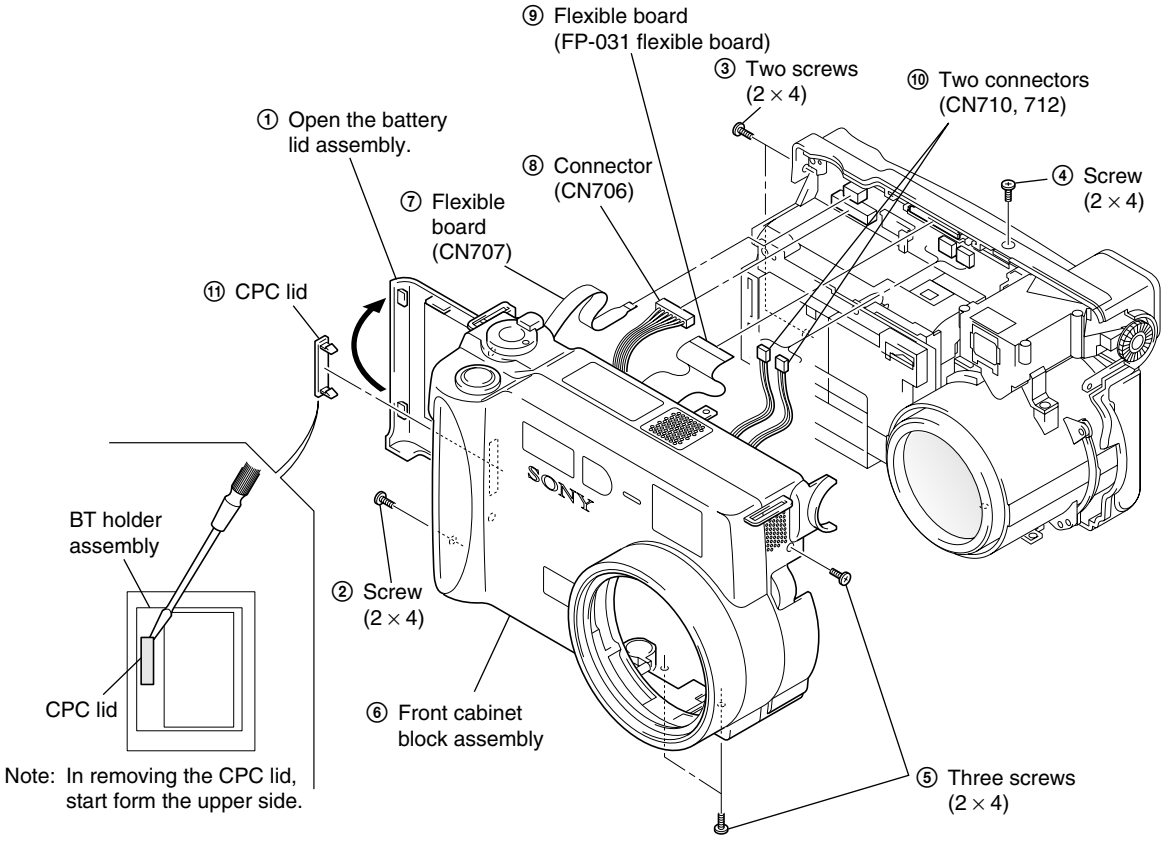
2. DISASSEMBLY

• This set can be disassembled in the order shown below.

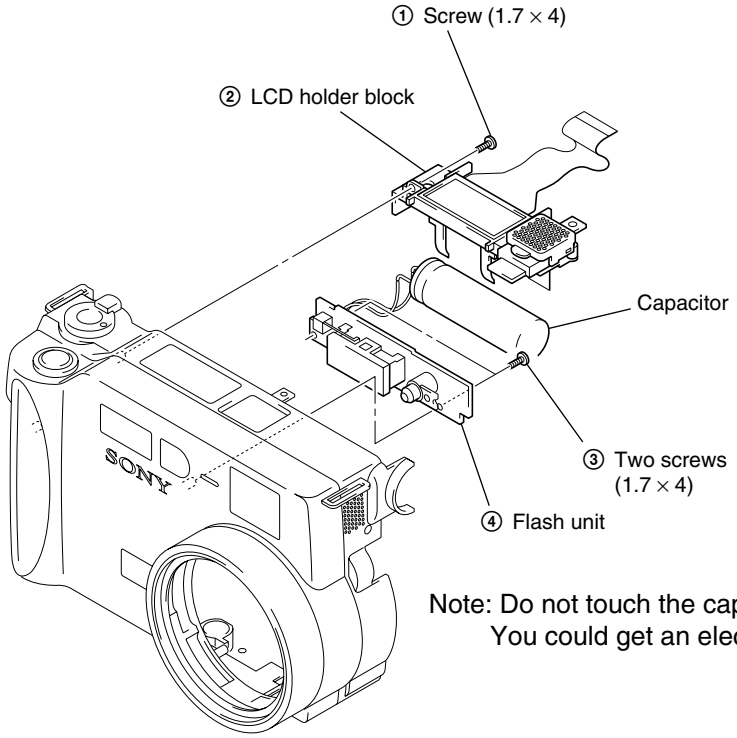

DSC-S70
2-1. FRONT CABINET BLOCK ASSEMBLY (page 6)
2-2. LCD HOLDER AND FLASH UNIT (page 7)
2-3. BATTERY LID ASSEMBLY AND SPEAKER (page 7)
2-4. CONTROL SWITCH BLOCK AND FRONT PANEL (page 8)
2-5. MS-54 BOARD AND BT HOLDER ASSEMBLY (page 8)
2-6. LENS BLOCK ASSEMBLY (page 9)
2-7. SY-58 BOARD AND DD-141 BOARD (page 9)
2-8. CONTROL SWITCH BLOCK, PD-128 BOARD AND INDICATOR MODULE (page 10)
2-9. SL-56 BOARD (page 10)

Note: Follow the disassembly procedure in the numerical order given.

2-1. FRONT CABINET BLOCK ASSEMBLY

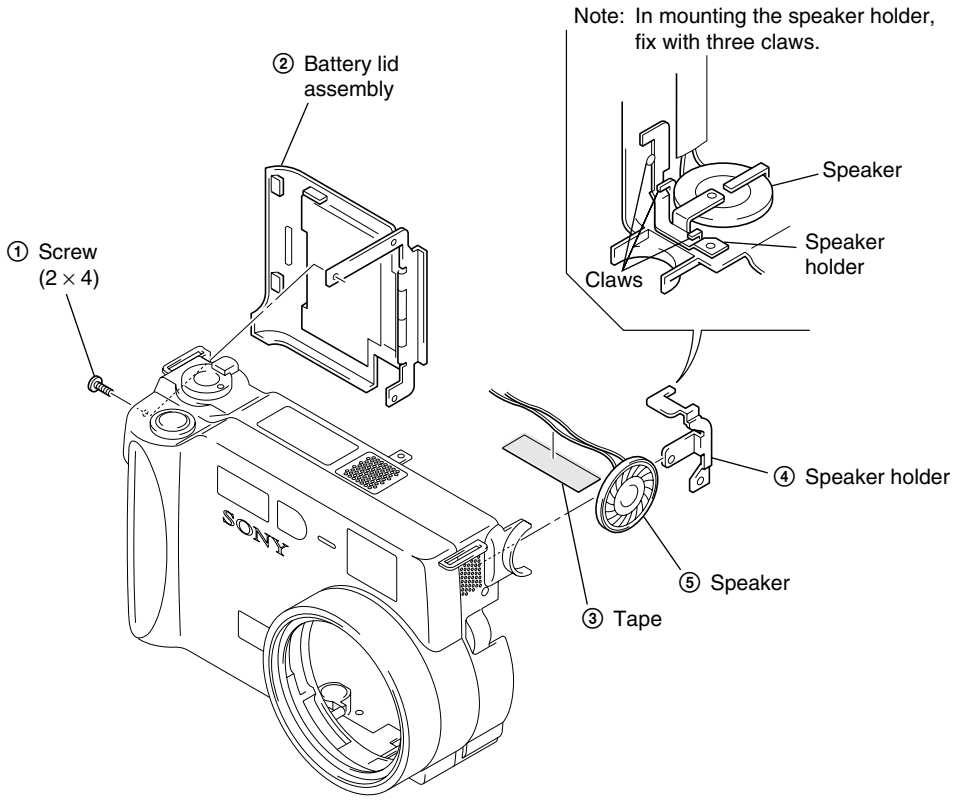

⑨ Flexible board (FP-031 flexible board)
③ Two screws (2 × 4)
⑩ Two connectors (CN710, 712)
① Open the battery lid assembly.
⑧ Connector (CN706)
④ Screw (2 × 4)
⑦ Flexible board (CN707)
⑪ CPC lid
BT holder assembly
② Screw (2 × 4)
CPC lid
⑥ Front cabinet block assembly
⑤ Three screws (2 × 4)
Note: In removing the CPC lid, start form the upper side.

2-2. LCD HOLDER AND FLASH UNIT

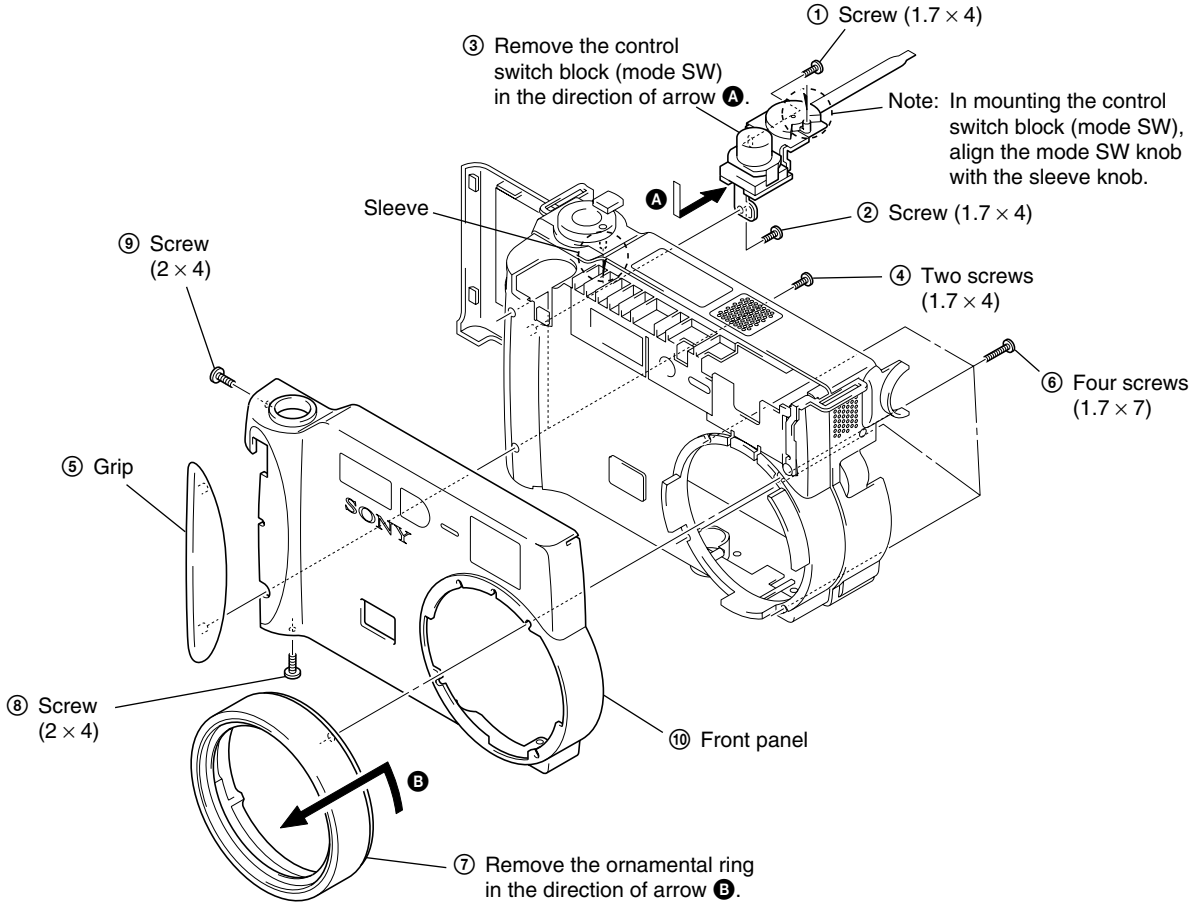


Note: Do not touch the capacitor terminals.
You could get an electric shock.

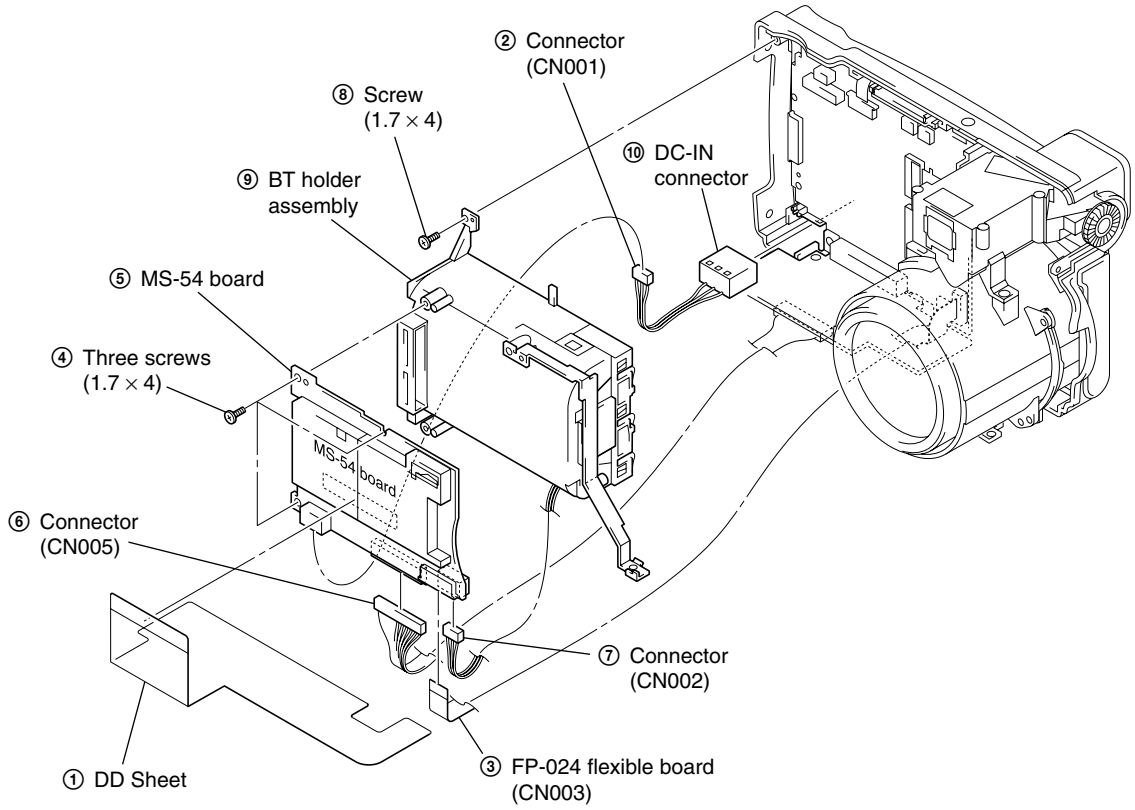
2-3. BATTERY LID ASSEMBLY AND SPEAKER



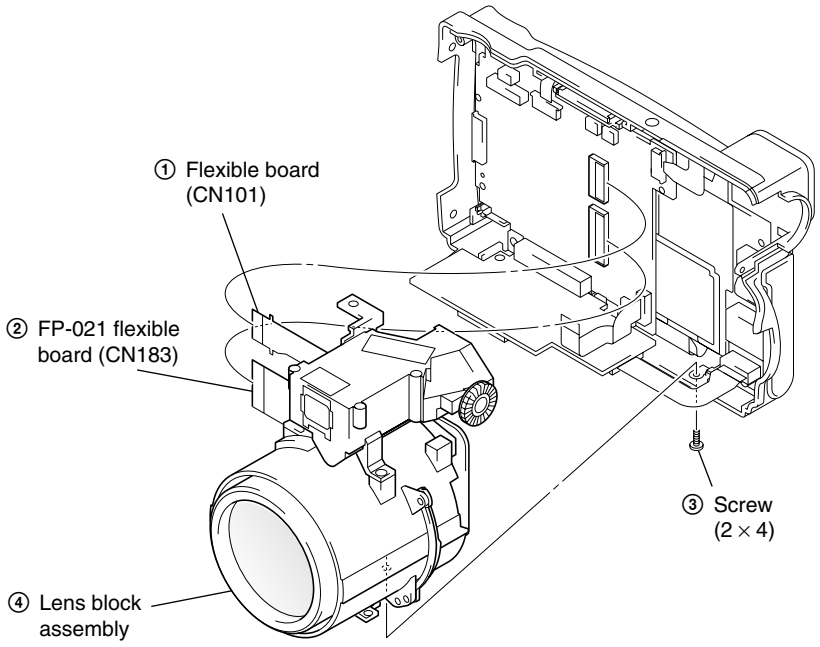
2-4. CONTROL SWITCH BLOCK AND FRONT PANEL


① Screw (1.7 × 4)
③ Remove the control switch block (mode SW) in the direction of arrow A.
Note: In mounting the control switch block (mode SW), align the mode SW knob with the sleeve knob.
Sleeve
② Screw (1.7 × 4)
⑨ Screw (2 × 4)
④ Two screws (1.7 × 4)
⑥ Four screws (1.7 × 7)
⑤ Grip
⑧ Screw (2 × 4)
⑩ Front panel
⑦ Remove the ornamental ring in the direction of arrow B.

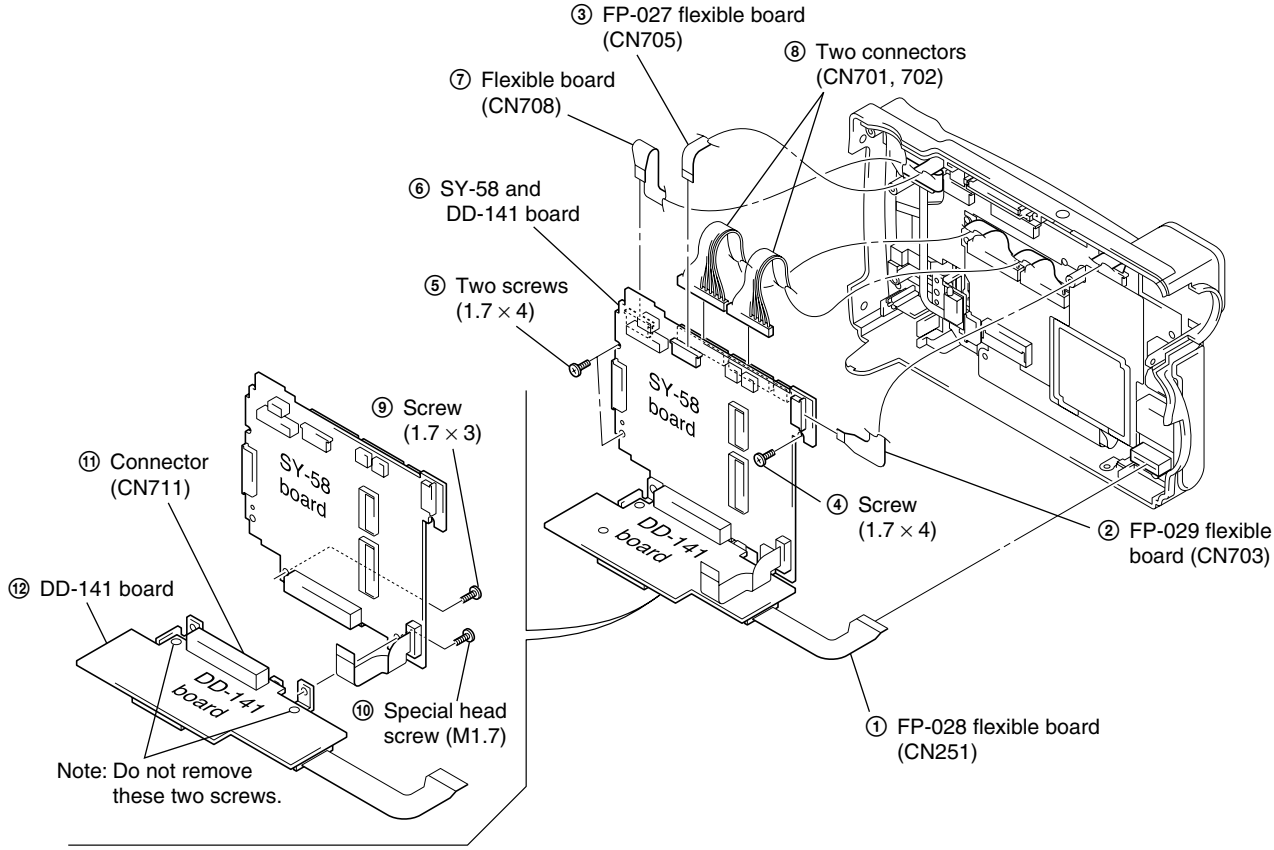
2-5. MS-54 BOARD AND BT HOLDER ASSEMBLY



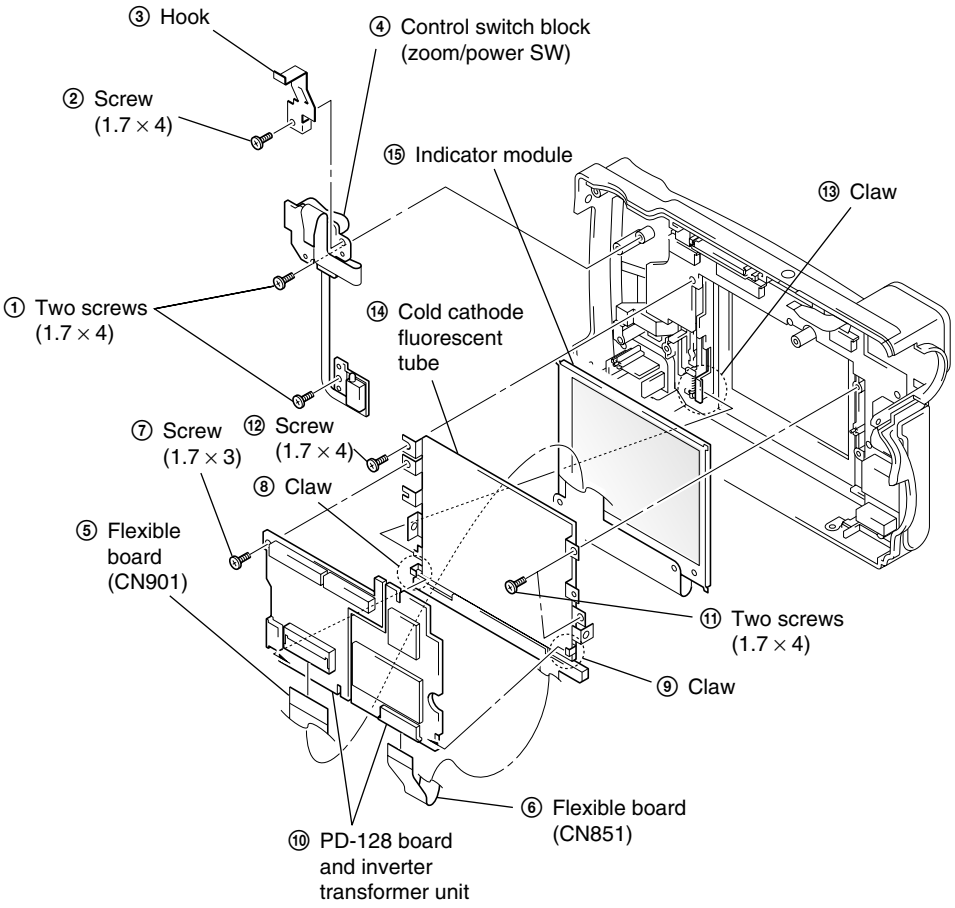
2-6. LENS BLOCK ASSEMBLY



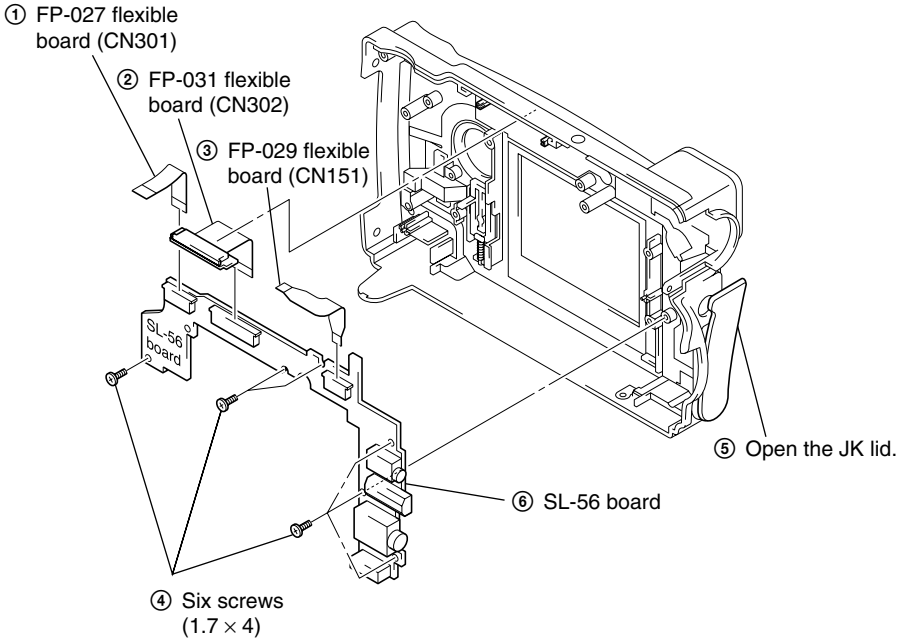
2-7. SY-58 BOARD AND DD-141 BOARD


③ FP-027 flexible board (CN705)
⑧ Two connectors (CN701, 702)
⑦ Flexible board (CN708)
⑥ SY-58 and DD-141 board
⑤ Two screws (1.7 × 4)
SY-58 board
DD-141 board
⑨ Screw (1.7 × 3)
⑪ Connector (CN711)
⑫ DD-141 board
⑩ Special head screw (M1.7)
Note: Do not remove these two screws.
④ Screw (1.7 × 4)
② FP-029 flexible board (CN703)
① FP-028 flexible board (CN251)

2-8. CONTROL SWITCH BLOCK, PD-128 BOARD AND INDICATOR MODULE


③ Hook
④ Control switch block (zoom/power SW)
② Screw (1.7 × 4)
⑮ Indicator module
⑬ Claw
① Two screws (1.7 × 4)
⑭ Cold cathode fluorescent tube
⑦ Screw (1.7 × 3)
⑫ Screw (1.7 × 4)
⑧ Claw
⑤ Flexible board (CN901)
⑪ Two screws (1.7 × 4)
⑨ Claw
⑥ Flexible board (CN851)
⑩ PD-128 board and inverter transformer unit

2-9. SL-56 BOARD


① FP-027 flexible board (CN301)
② FP-031 flexible board (CN302)
③ FP-029 flexible board (CN151)
SL-56 board
⑤ Open the JK lid.
⑥ SL-56 board
④ Six screws (1.7 × 4)

3. REPAIR PARTS LIST

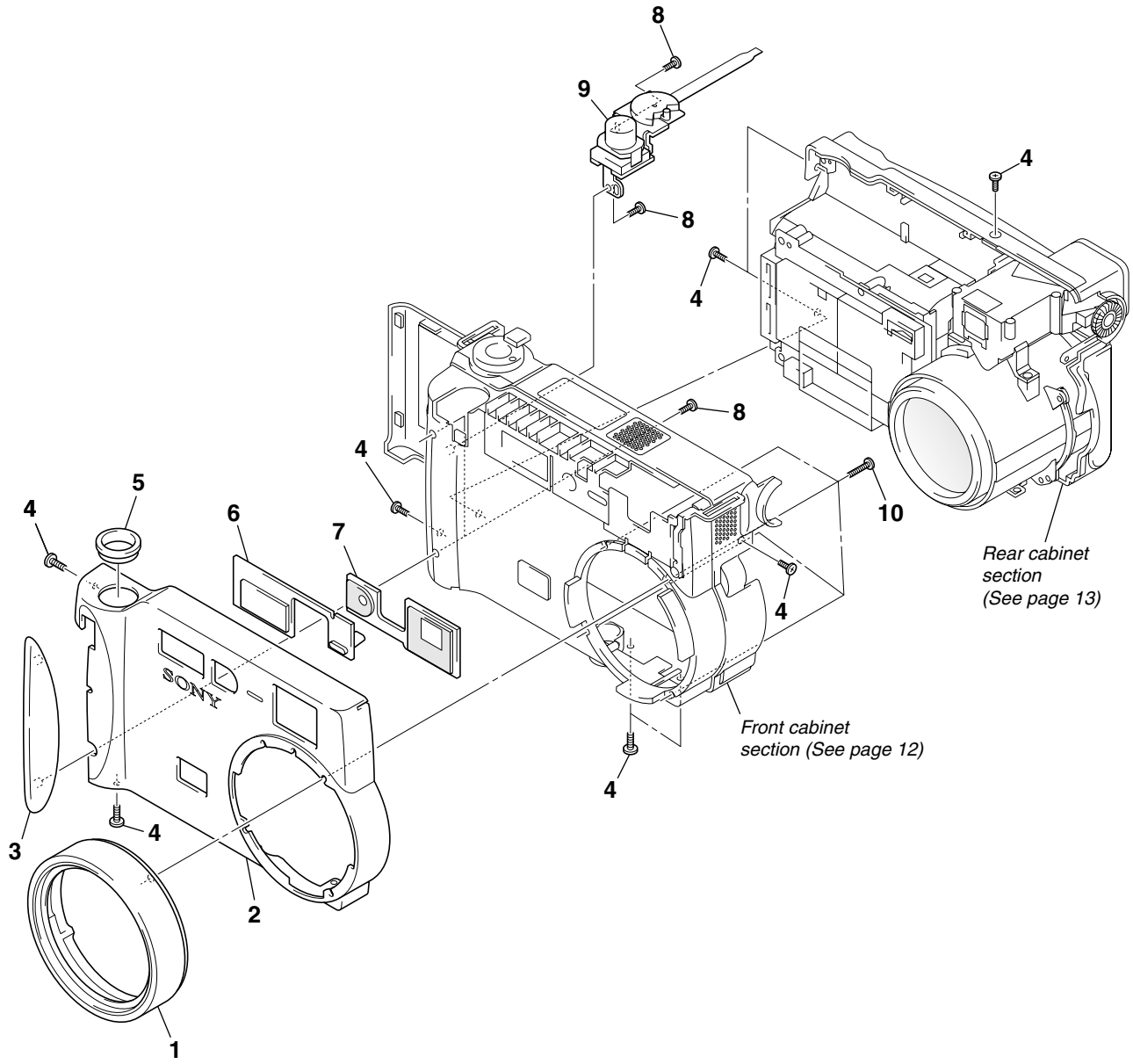
3-1. EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

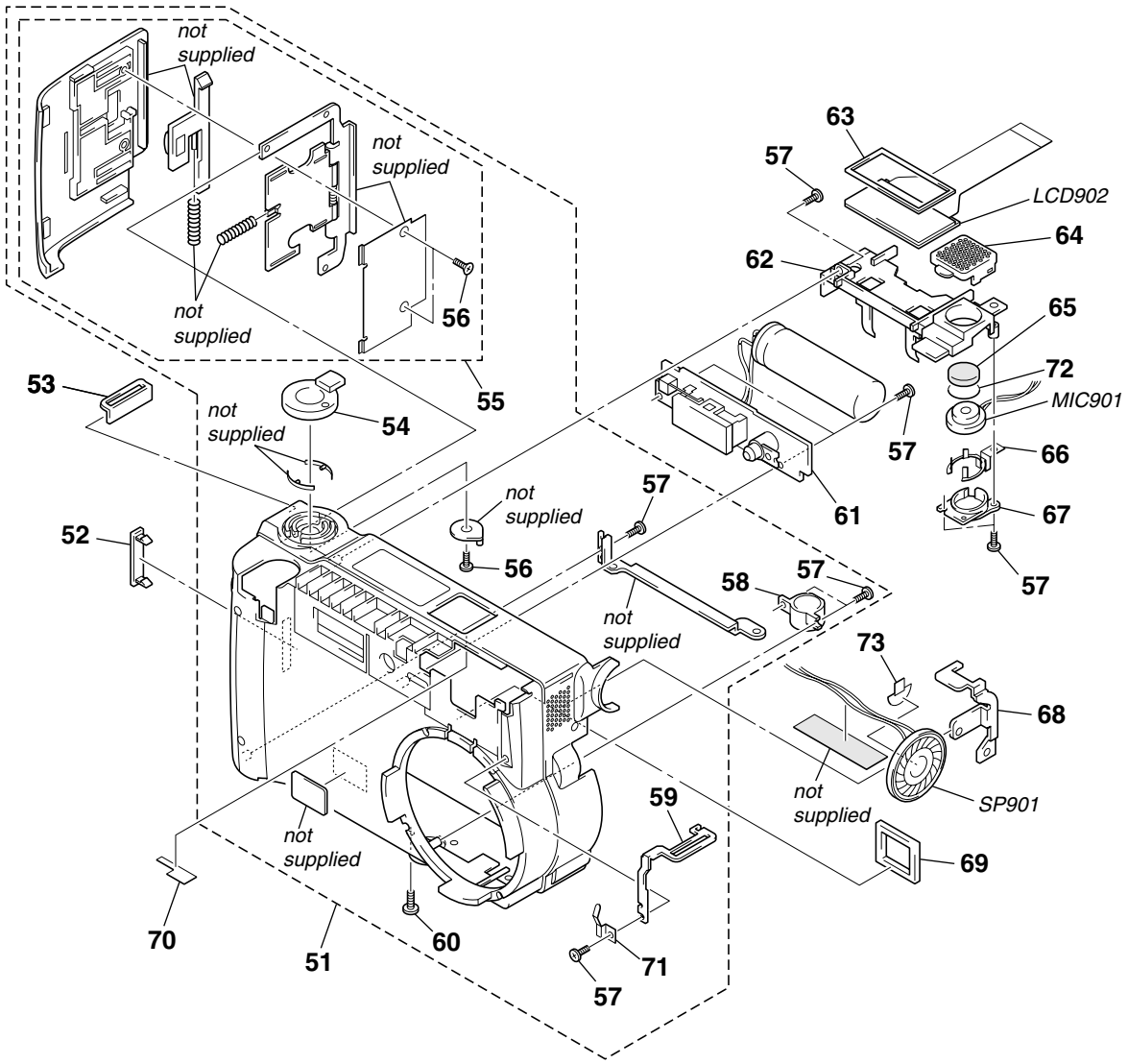
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

3-1-1. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	3-060-265-01	RING, ORNAMENTAL	
2	3-060-261-02	PANEL (FRONT), ALUMINUM	
3	3-060-262-01	GRIP	
4	3-968-729-71	SCREW (M2), LOCK ACE, P2	
5	3-060-266-01	ESCUTCHEON	
6	3-060-264-01	WINDOW, STROBOSCOPE	
7	3-060-263-01	WINDOW	
8	3-914-366-01	SCREW (DIA. 1.7X4), PRECISION	
9	1-418-985-11	SWITCH BLOCK, CONTROL (MODE SW)	
10	3-060-271-01	SCREW (M1.7X7)	

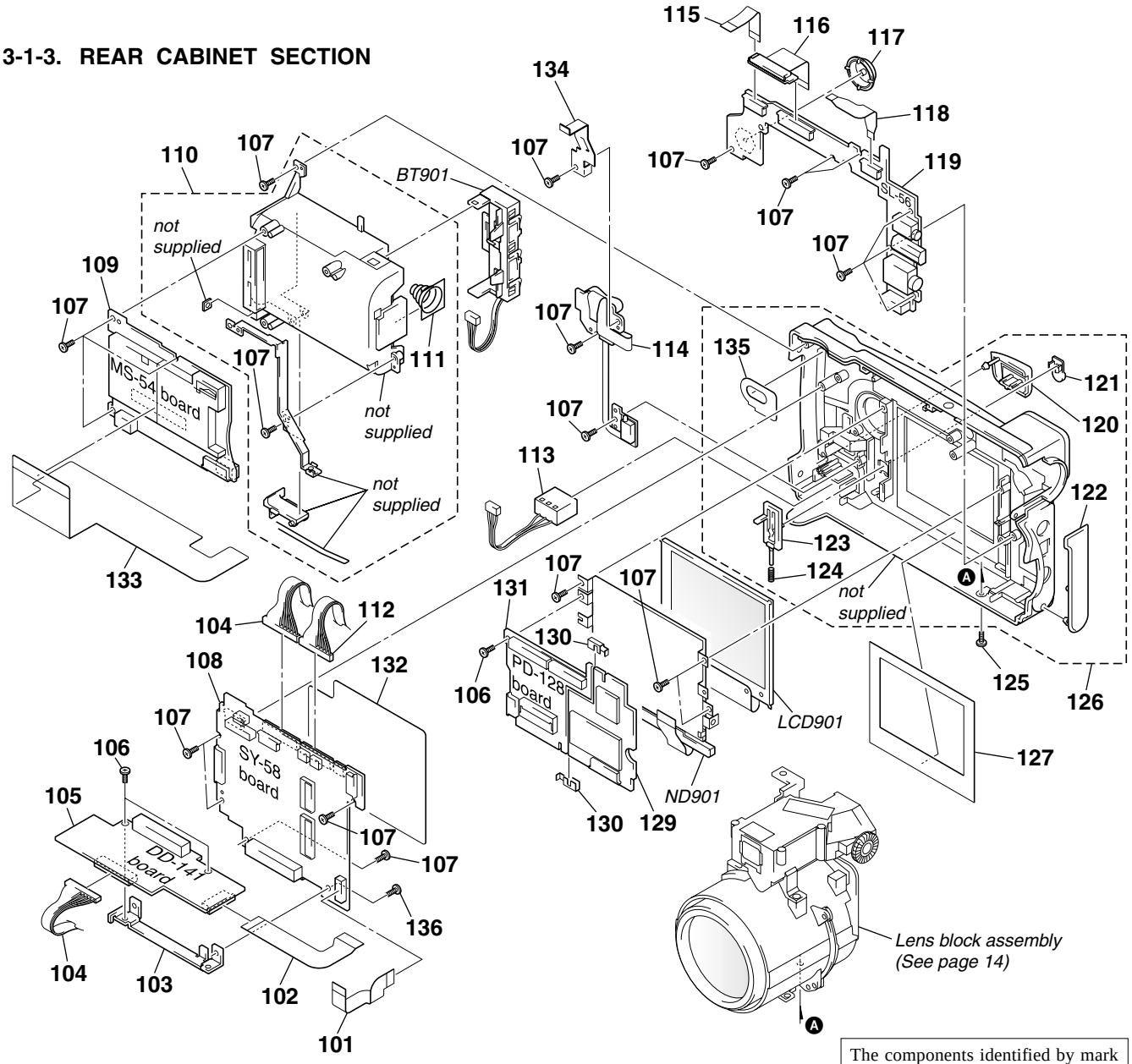
3-1-2. FRONT CABINET SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	X-3950-544-2	CABINET (FRONT) ASSY	
52	3-060-251-01	LID, CPC	
53	3-060-267-01	BRACKET (L), STRAP	
54	3-060-275-01	KNOB, MODE	
55	X-3950-546-1	LID ASSY, BATTERY	
56	3-318-382-01	SCREW (1.7X3), TAPPING	
57	3-914-366-01	SCREW (DIA. 1.7X4), PRECISION	
58	3-060-274-01	SCREW, TRIPOD	
59	3-060-279-01	BRACKET (R), STRAP	
60	3-968-729-71	SCREW (M2), LOCK ACE, P2	
⚠61	not supplied	FLASH UNIT	
62	X-3950-545-1	HOLDER ASSY, LCD	
63	3-060-269-01	CUSHION (INDICATION WINDOW)	
64	3-060-268-01	GRILLE, MICROPHONE	
* 65	3-055-971-11	CUSHION, MICROPHONE	
* 66	3-061-237-01	PLATE, MICROPHONE GROUND	
67	3-060-259-01	HOLDER, MICROPHONE	
68	3-060-260-01	HOLDER, SPEAKER	
* 69	3-061-734-02	CUSHION (OVF FRONT)	
* 70	3-061-735-01	SHEET (MIC), ELECTROSTATIC	
* 71	3-062-239-01	PLATE (AF), GROUND	
* 72	3-062-240-02	SHEET (1), SOUND ABSORPTION	
* 73	3-062-689-01	SHEET, SP	
LCD902	not supplied	DISPLAY PANEL, LIQUID CRYSTAL	
MIC901	1-542-428-11	MICROPHONE UNIT	
SP901	1-505-862-31	SPEAKER (2.0 cm)	

3-1-3. REAR CABINET SECTION

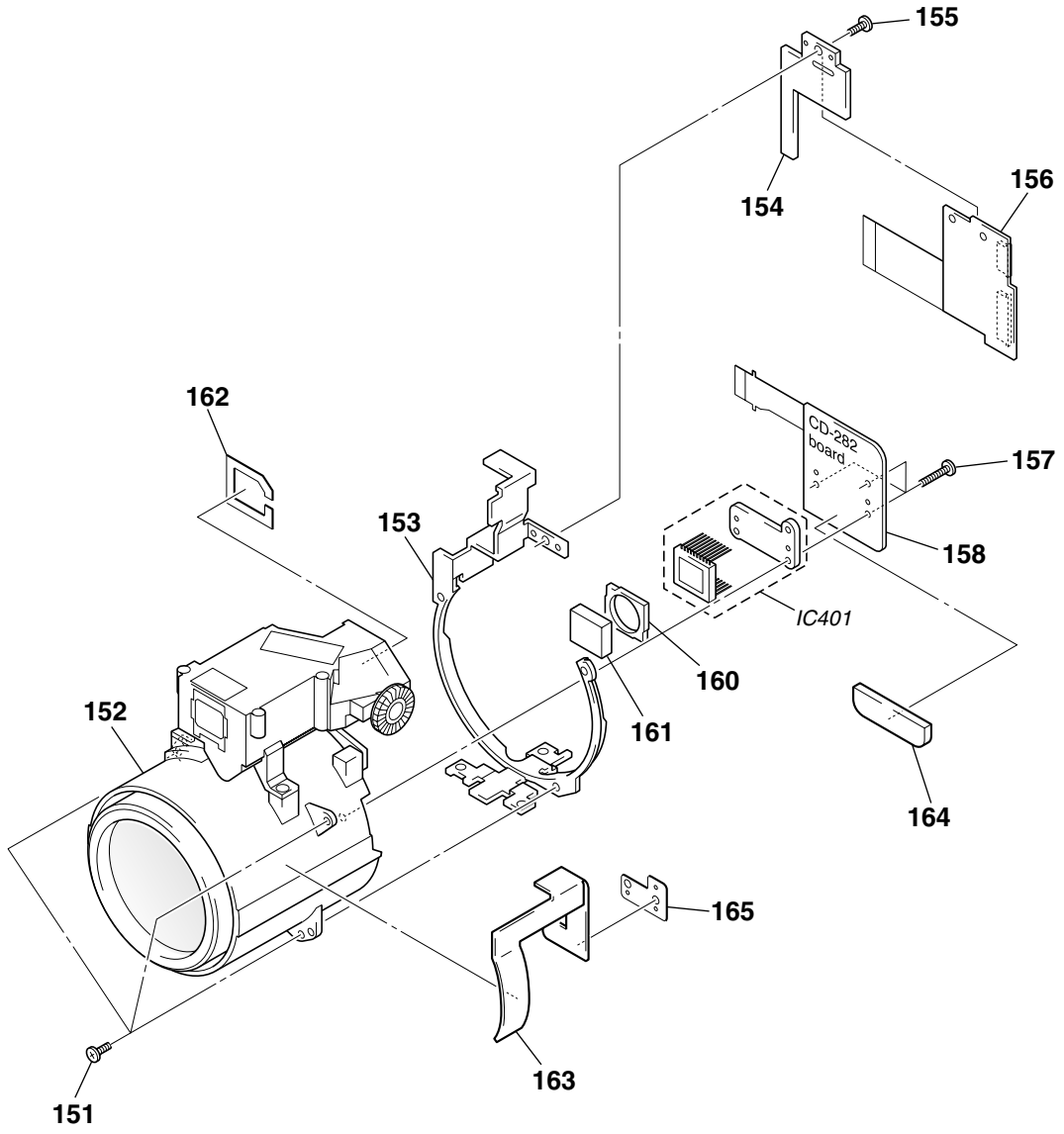


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
101	1-677-877-11	FP-024 FLEXIBLE BOARD	
102	1-677-879-11	FP-028 FLEXIBLE BOARD	
* 103	3-060-250-01	FRAME, SD	
104	1-960-457-11	HARNESS (YP-052) (14P)	
105	not supplied	DD-141 BOARD, COMPLETE	
106	3-989-735-51	SCREW (M1.7), LOCK ACE, P2	
107	3-914-366-01	SCREW (DIA. 1.7X4), PRECISION	
108	not supplied	SY-58 BOARD, COMPLETE (SERVICE)	
109	not supplied	MS-54 BOARD, COMPLETE	
110	X-3950-543-2	HOLDER ASSY, BT	
111	3-969-380-01	SPRING, BATTERY	
112	1-960-456-11	HARNESS (YP-051) (12P)	
⚠113	1-794-045-11	CONNECTOR, DC-IN	
114	1-418-986-11	SWITCH BLOCK, CONTROL (ZOOM/POWER SW)	
115	1-677-878-11	FP-027 FLEXIBLE BOARD	
116	1-677-881-11	FP-031 FLEXIBLE BOARD	
117	3-061-157-01	BUTTON, FUNCTION	
118	1-677-880-11	FP-029 FLEXIBLE BOARD	
119	not supplied	SL-56 BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
120	3-060-298-01	COVER, DC	
121	3-060-299-01	KNOB, POWER	
122	3-060-301-01	LID, JK	
123	3-060-297-01	HOLDER, POWER	
124	3-051-520-01	SPRING, POWER	
125	3-968-729-71	SCREW (M2), LOCK ACE, P2	
126	X-3950-548-2	CABINET (REAR) ASSY	
127	3-060-294-01	CUSHION (LCD)	
⚠129	not supplied	TRANSFORMER UNIT, INVERTER	
* 130	3-051-232-01	CLIP, PCB	
131	not supplied	PD-128 BOARD, COMPLETE	
* 132	3-061-166-01	SHEET, SY	
* 133	3-061-665-01	DD SHEET	
* 134	3-062-431-01	HOOK	
* 135	3-062-337-01	SHEET (ZOOM), ELECTROSTATIC	
136	3-061-216-11	ACE (M1.7), SPECIAL HEAD LOCK	
⚠ND901	not supplied	TUBE, FLUORESCENT, COLD CATHODE	
BT901	1-694-654-11	TERMINAL BOARD, BATTERY	
LCD901	not supplied	INDICATOR MODULE LIQUID CRYSTAL	

3-1-4. LENS BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	3-989-735-31	SCREW (M1.7), LOCK ACE, P2	
152	not supplied	LENS ASSY (VCL-7003XA)	
153	3-060-311-01	FRAME, LENS	
* 154	3-061-362-01	HOLDER, FP	
155	3-054-938-01	SCREW, STEP	
156	1-677-875-21	FP-021 FLEXIBLE BOARD	
157	3-318-203-11	SCREW (B1.7X6), TAPPING	
158	not supplied	CD-282 BOARD, COMPLETE	
160	not supplied	RUBBER (N), SEAL	
161	not supplied	FILTER BLOCK, OPTICAL	
* 162	3-061-732-01	CUSHION (EYEPIECE WINDOW)	
* 163	3-061-736-01	HEAT SINK, CCD	
* 164	3-062-032-01	CUSHION, LENS	
* 165	3-062-493-01	SHEET, CD	
IC401	not supplied	CCD BLOCK ASSY (CCD IMAGER)	

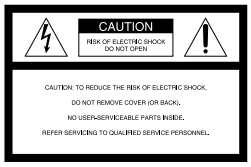
4. GENERAL

This section is extracted from DSC-S70 instruction manual.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

For the Customers in the U.S.A.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Never expose the battery pack to temperature above 140˚F (60˚C), such as in a car parked in the sun or under direct sunlight.

If you have any questions about this product, you may call:
Sony Customer Information Center
1-800-222-SONY (7669)
or write to:
Sony Customer Information Center
1 Sony Drive, Mail Drop #T1-11, Park Ridge, NJ 07656

CAUTION
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Declaration of Conformity

Trade Name:	SONY
Model No.:	DSC-S70
Responsible Party:	Sony Electronics Inc.
Address:	1 Sony Drive, Park Ridge, NJ 07656 USA
Telephone No.:	201-930-6972

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the Customers in the U.S.A. and Canada

DISPOSAL OF LITHIUM ION BATTERY.
LITHIUM ION BATTERY.
DISPOSE OF PROPERLY.

You can return your unwanted lithium ion batteries to your nearest Sony Service Center or Factory Service Center.

Note:
In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)
For the Sony Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution:
Do not handle damaged or leaking lithium ion battery.

For the Customers in Canada

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

NOTICE FOR THE CUSTOMERS IN THE UNITED KINGDOM

A moulded plug complying with BS 1363 is fitted to this equipment for your safety and convenience.

Should the fuse in the plug supplied need to be replaced, a 5 AMP fuse approved by ASTA or BSI to BS 1362, (i.e. marked with ⓐ or ⓑ mark) must be used.

If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

For the Customers in Germany

Directive:EMC Directive 89/336/EEC.92/31/EEC
This equipment complies with the EMC regulations when used under the following circumstances:
• Residential area
• Business district
• Light-industry district
(This equipment complies with the EMC standard regulations EN55022 Class B.)

Attention

The electromagnetic fields at the specific frequencies may influence the picture and sound of this camera.

"Memory Stick"

CE N50

For the Customers in CANADA

This Class B digital apparatus complies with Canadian ICES-003.

For the Customers in the U.S.A.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Be sure to read the following before using your camera

Trial recording
Before you record one-time events, you may want to make a trial recording to make sure that the camera is working correctly.

No compensation for contents of the recording
Contents of the recording cannot be compensated for if recording or playback is not possible due to a malfunction of your camera, etc.

Notes on image data compatibility
• This camera conforms with the Design Rules for Camera File Systems universal standard established by the JEIDA (Japan Electronic Industries Development Association). You cannot play back on your camera still images recorded on other equipment (DCR-TRV890/TRV900/TRV900E, DSC-D700, DSC-D770) that does not conform with this universal standard. (These models are not sold in some areas.)
• Playback of images recorded with your camera on other equipment and playback of images recorded or edited with other equipment on your camera are not guaranteed.

Precaution on copyright
Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Do not shake or strike the camera
In addition to malfunctions and inability to record images, this may render the "Memory Stick" unusable or image data breakdown, damage or loss may occur.

Do not aim the camera at the sun or other bright light
This may cause irrecoverable damage to your eyes.

LCD screen and lens
• The LCD screen is manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen. These points are normal in the manufacturing process and do not affect the recording in any way. Over 99.99% of the pixels are operational for effective use.
• Be careful when placing the camera near a window or outdoors. Exposing the LCD screen or the lens to direct sunlight for long periods may cause malfunctions.

Do not get the camera wet
When taking pictures outdoors in the rain or under similar conditions, be careful not to get the camera wet. If moisture condensation occurs, refer to page 54 and follow the instructions on how to remove it before using the camera.

Back up recommendation
To avoid the potential risk of data loss, always copy (back up) data to a disk.

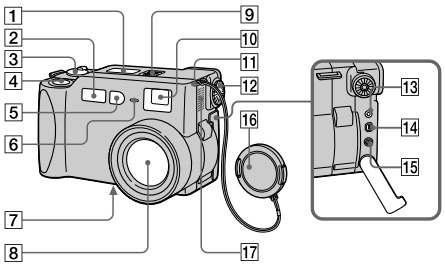
Handling of the movable lens
This camera uses a movable lens.
Be careful not to strike or apply excessive force to the lens portion.

About the Carl Zeiss lens
This camera is equipped with a Carl Zeiss lens which is capable of reproducing fine images. The lens for this camera uses the MTF* measurement system for cameras developed jointly by Carl Zeiss, in Germany, and Sony Corporation, and offers the same quality as other Carl Zeiss lenses.
* MTF is the abbreviation of Modulation Transfer Function/Factor, a numeric value indicating the ability to reproduce the subject contrast.

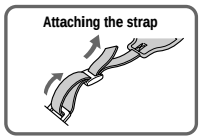
Getting started

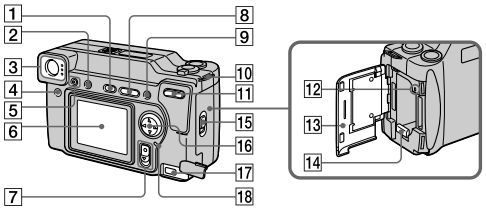
Identifying the parts

See the pages in parentheses for details of operation.



1 **Display window**
2 **Flash (20)**
3 **MODE selector (30)**
4 **Shutter button (16) (21)**
5 **Photocell window for flash**
Do not block while recording.
6 **Self-timer/recording lamp**
7 **Tripod receptacle (bottom surface)**
Use a tripod with a screw length of less than 9/32 inch (6.5 mm). You will be unable to firmly secure the camera to tripods having longer screws, and may damage the camera.
8 **Lens**
When cleaning the lens, first return the lens to the fully retracted position and turn off the power, then gently wipe the lens.
9 **Built-in microphone**
Do not touch while recording.
10 **Finder window**
11 **Hook for lens cap/strap**
12 **Finder adjustment dial (17)**
13 **⚡ (External flash) jack**
14 **USB jack (26) (27)**
15 **A/V OUT jack (48)**
Audio output is monaural.
16 **Lens cap**
Be sure to remove the lens cap before turning on your camera.
17 **Speaker**



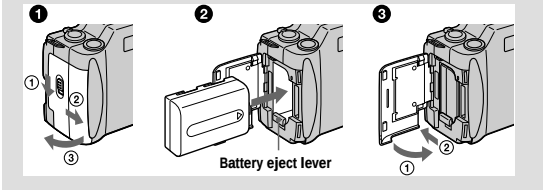


1 **PROGRAM AE button (42)**
2 **LCD ON/OFF button**
3 **Finder**
Self-timer/recording lamp (red)
AE lock lamp (green)
Strobe charge lamp (orange)
4 **FOCUS button (41)**
5 **Flash button**
6 **LCD screen**
7 **POWER switch**
8 **VOLUME +/– button**
PROGRAM AE +/– button
9 **DISPLAY button**
10 **Hook for lens cap/strap**
11 **Zoom button**
12 **Access lamp (15)**
13 **Battery/"Memory Stick" cover**
14 **Battery eject lever (8)**
15 **OPEN switch**
16 **Control button**
17 **DC IN jack (9) (12)**
18 **POWER lamp**

Preparing the power supply

Installing the battery pack

Your camera operates only with the "InfoLITHIUM" NP-FM50 battery pack* (M series). You cannot use any other battery pack.



1 Open the battery/"Memory Stick" cover.
Open the cover while sliding the OPEN switch in the direction of the arrow.

2 Install the battery pack.
Insert the battery pack with the ▶ mark facing toward the battery compartment as illustrated.

3 Close the battery/"Memory Stick" cover.

To remove the battery pack

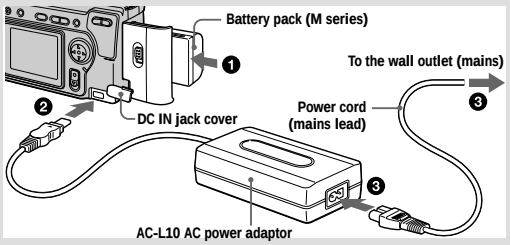
Open the battery/"Memory Stick" cover. Slide the battery eject lever downward, and remove the battery pack.
Be careful not to drop the battery pack when removing it.

**** What is "InfoLITHIUM"?***

"InfoLITHIUM" is a lithium ion battery pack which can exchange information such as battery consumption with compatible video equipment. This unit is compatible with the "InfoLITHIUM" battery pack (M series). "InfoLITHIUM" M series battery packs have the mark. "InfoLITHIUM" is a trademark of Sony Corporation.

Charging the battery pack

You cannot charge the battery pack while your camera is turned on. Be sure to turn off your camera before charging.



1 Insert the battery pack into your camera.

2 Open the DC IN jack cover and connect the DC connecting cable to the DC IN jack of your camera with the ▲ mark facing up.

3 Connect the power cord (mains lead) to the AC power adaptor and then to a wall outlet (mains).
The CHARGE lamp in the display window flashes when charging begins. When the CHARGE lamp goes off, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack inserted for about one hour after normal charge is completed until the battery remaining indicator and "FULL" is displayed alternately in the display window.

Battery remaining indicator

The LCD screen on the camera shows the remaining time for which you can still record or play back images.
This indication may not be entirely accurate depending on the conditions of use and the operating environment.

Auto power-off function

If you do not operate the camera for about three minutes during recording, the camera turns off automatically to prevent wearing down the battery. To use the camera again, slide down the POWER switch to turn on the camera again.

Charging time

Battery pack	Full charge (min.)	Normal charge (min.)
NP-FM50 (supplied)	150	90

Approximate time to charge a completely discharged battery pack using the AC-L10 AC power adaptor.

Battery life and number of images that can be recorded/played back

STILL mode recording*

	NP-FM50 (supplied)	
	Battery life (min.)	Number of images
LCD screen ON	120 (110)	1600 (1400)
LCD screen OFF	150 (140)	2000 (1800)

STILL mode playback**

	NP-FM50 (supplied)	
	Battery life (min.)	Number of images
LCD screen ON	220 (210)	4400 (4200)

Approximate battery life and number of images that can be recorded/played back with a fully charged battery pack at a temperature of 77˚F (25˚C), 640×480 image size and in NORMAL recording mode. Numbers in parentheses indicate the time when you use a normally charged battery pack.

* Recording at about 4-second intervals
** Playing back single images in order at about 3-second intervals

MOVIE mode recording

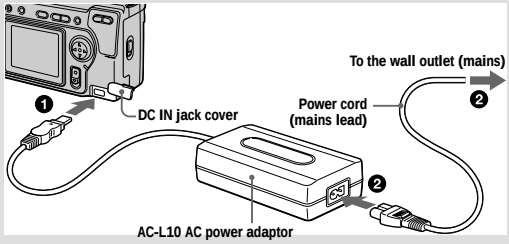
	NP-FM50 (supplied)	
	LCD screen OFF (min.)	LCD screen ON (min.)
Continuous recording	150 (140)	130 (120)

Approximate time that can be recorded with a fully charged battery pack at a temperature of 77˚F (25˚C) and 160×112 image size. Numbers in parentheses indicate the time when you use a normally charged battery pack.

Notes

- The battery life and number of images will be decreased if you use your camera at low temperatures, use the flash, repeatedly turn the power on/off or use the zoom.
- The capacity of the "Memory Stick" is limited. The above figures are a guide when you continuously record/play back while replacing the "Memory Stick."
- "----" appears in the display window until the battery usable time is calculated.
- During charging, the indicators in the display window may not appear correctly or may flash in the following cases.
  - — When the battery pack is not installed correctly.
  - — When the AC power adaptor is disconnected.
  - — When the battery pack has malfunctioned.
- When you turn the LCD screen on and off, it takes about one minute for the correct battery remaining time to appear.
- If sufficient battery remaining time is indicated but the power runs out soon, fully charge the battery so that the correct battery remaining time appears.
- Do not short the DC plug of the AC power adaptor with a metallic object, as this may cause malfunction.
- Do not expose the battery pack to water.

Using the AC power adaptor



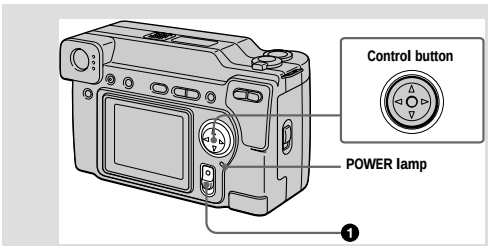
❶ Open the DC IN jack cover and connect the DC connecting cable to the DC IN jack of your camera with the ▲ mark facing up.

❷ Connect the power cord (mains lead) to the AC power adaptor and then to a wall outlet (mains).

Using a car battery
Use Sony DC adaptor/charger.

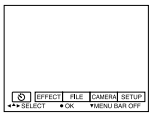
Setting the date and time

When you first use your camera, set the date and time. If these are not set, the CLOCK SET screen appears whenever you turn on your camera for recording.

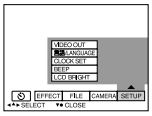


❶ Slide down the POWER switch to turn on the power.
The POWER lamp lights up.

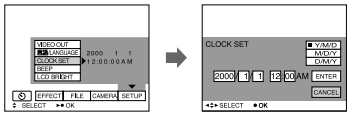
❷ Press ▲ on the control button.
The menu bar appears on the LCD screen.



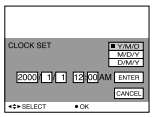
❸ Select [SETUP] with ► on the control button, then press the center ●.



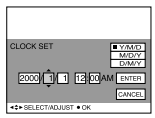
❹ Select [CLOCK SET] with ▲/▼ on the control button, then press the center ●.



❺ Select the desired date display format with ▲/▼ on the control button, then press the center ●.
Select from [Y/M/D] (year/month/day), [M/D/Y] (month/day/year) or [D/M/Y] (day/month/year).

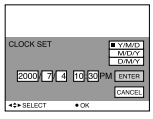


❻ Select the year, month, day, hour or minute item you want to set with ◄/► on the control button.
The item to be set is indicated with ▲/▼.



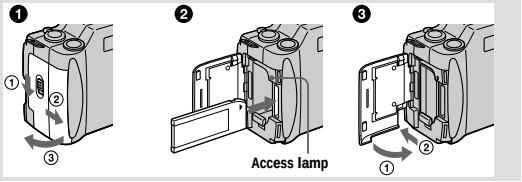
❼ Set the numeric value with ▲/▼ on the control button, then press the center ● to enter it.
After entering the number, ▲/▼ moves to the next item.
If you selected [D/M/Y] in step ❺, set the time on a 24-hour cycle.

❽ Select [ENTER] with ► on the control button, then press the center ● at the desired moment to begin clock movement.
The date and time are entered.



To cancel the date and time setting
Select [CANCEL] with ▲/▼/◄/► on the control button, then press the center ●.

Inserting the "Memory Stick"



1 Open the battery/"Memory Stick" cover.
Open the cover while sliding the OPEN switch in the direction of the arrow.

2 Insert the "Memory Stick."
Insert the "Memory Stick" with the ▶ mark facing toward the battery compartment as illustrated until it clicks.

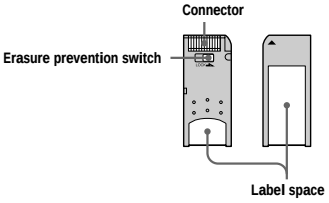
3 Close the battery/"Memory Stick" cover.

Removing the "Memory Stick"

Open the battery/"Memory Stick" cover, then press the "Memory Stick" once lightly.

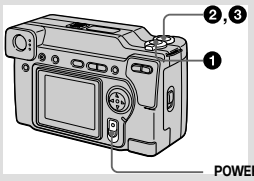
Notes

- Insert the "Memory Stick" firmly until it clicks, otherwise a message such as "MEMORY STICK ERROR" will be displayed.
- Never remove the "Memory Stick" or turn off the power while the access lamp is lit up.
- You cannot record or edit images on a "Memory Stick" if the erasure prevention switch is set to the LOCK position.



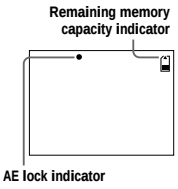
Recording still images

Still images are recorded in JPEG format.
To record still images, slide the POWER switch down to turn on the power and insert a "Memory Stick."



1 Set the MODE selector to STILL.

2 Press and hold the shutter button halfway down and check the image.
While the AE lock indicator ● (green) is flashing, the image freezes momentarily, but is not yet recorded. When the camera finishes the automatic adjustments*, the AE lock indicator ● lights up and the camera is ready for recording.
To cancel the recording, release the shutter button.



3 Press the shutter button fully down.
The shutter sounds and the image is recorded on the "Memory Stick."
When "REC" disappears, you can record the next image.

* Exposure and focus are automatically adjusted.

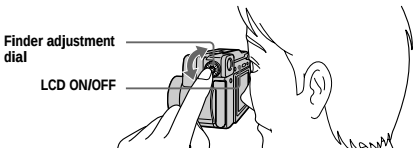
The number of images you can record on a "Memory Stick"
See pages 38 to 40.

Notes

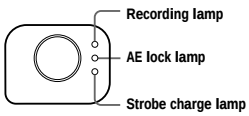
- Do not touch the lens portion while it is operating.
- While the image is being recorded on the "Memory Stick," do not shake or strike the camera. Also, do not turn the power off, or remove the battery pack or "Memory Stick."
- When recording a bright subject, the LCD screen color may change after AE lock, but this does not affect the recorded image.

Recording images with the finder

Turn the finder adjustment dial until the image appears clearly within the finder, then record the image.



Indicators in the finder



To turn off the LCD screen

Press LCD ON/OFF.

Notes

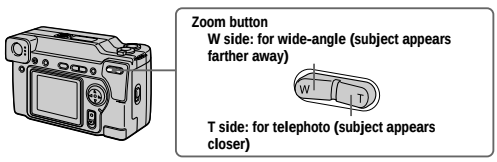
- When you record a subject closer than 3 1/4 feet (1 m), the positions of the finder and the lens differ, so record using the LCD screen.
- You cannot view digitally zoomed images with the finder. Check these images using the LCD screen.
- You cannot turn off the LCD screen when [DEMO] or [CONVERSION] are set to [ON] in the menu settings.

Checking the last recorded image (Quick Review)

You can check the last recorded image by clearing the menu bar from the screen (page 32) and pressing ◀ on the control button. To return to the normal recording mode, press lightly on the shutter button or select [RETURN] with ◀/▶ on the control button and then press the center ●. You can also delete the image first by selecting [DELETE] on the Quick Review screen with ◀/▶ on the control button and pressing the center ●, and then selecting [OK] with ▲/▼ on the control button and pressing the center ●.

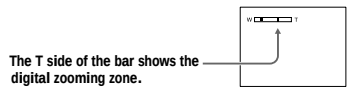
Using the zoom feature

The lens portion moves during zoom operation. Be careful not to touch the lens portion while it is operating.



Minimum focal distance to the subject
W side: About 9 7/8 inches (25 cm) or more
T side: About 9 7/8 inches (25 cm) or more
To record even closer subjects, see page 41.

Digital zoom function
This camera has a digital zoom function.
Digital zoom enlarges the image by digital processing and it starts to function when zoom exceeds 3×.



Using digital zoom

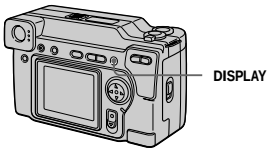
- The maximum zoom magnification is 6×.
- Digital zooming deteriorates the picture quality. When digital zoom is not necessary, set [DIGITAL ZOOM] to [OFF] in the menu settings (page 35).

Notes

- Zoom does not work while recording moving images.
- Digital zoom does not work for moving images.
- Digitally zoomed images do not appear in the finder.

LCD screen indicators during recording

Press DISPLAY to turn on/off the indicators on the LCD screen.
See page 65 for a detailed description of the indicated items.

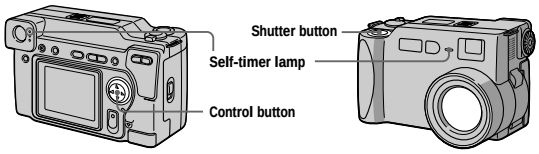


Notes

- You cannot turn off the self-timer indicators and some of the indicators used in advanced operations.
- The indicators on the LCD screen are not recorded.

Using the self-timer

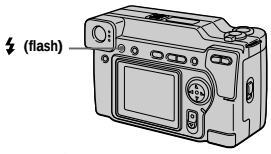
When you use the self-timer function, the subject is recorded about 10 seconds after you press the shutter button.



Select (self-timer) indicator on the LCD screen with ▲/▼/◀/▶ on the control button, then press the center ●. The (self-timer) indicator appears on the LCD screen, and about 10 seconds after you press the shutter button, the subject is recorded. The self-timer lamp flashes after you press the shutter button until the shutter is released.

Recording images with the flash

The initial setting is auto (no indicator). In this mode, the flash automatically strobes when the surroundings become dark. When you change the flash mode, press the (flash) repeatedly so that the flash mode indicator appears on the LCD screen.



Each time you press the (flash), the indicator changes as follows.
(No indicator) → → → → (No indicator)

Auto red-eye reduction:	The flash strobes before recording to reduce the red-eye phenomenon.
Forced flash:	The flash strobes regardless of the surrounding brightness.
No flash:	The flash does not strobe.

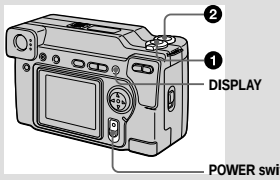
You can change the brightness of the flash (FLASH LEVEL) in the menu settings (page 35).

Notes

- The recommended shooting distance using the built-in flash is 31/32 feet to 8 1/3 feet (0.3 m to 2.5 m).
- Attaching a conversion lens (not supplied) may block the light from the flash or cause the lens shadow to appear.
- You cannot use an external flash and the built-in flash at the same time.
- Auto red-eye reduction may not produce the desired red-eye reduction effects depending on individual differences, the distance to the subject, if the subject does not see the pre-strobe, or other conditions. In addition, red-eye reduction effects are also difficult to obtain if you set the shutter to a slow speed in the PROGRAM AE shutter priority mode.
- The flash effect is not obtained easily when you use forced flash in a bright location.

Recording moving images

Moving images with audio are recorded in MPEG format.
To record moving images, slide the POWER switch down to turn on the power and insert a “Memory Stick.”



1 Set the MODE selector to MOVIE.

2 Press the shutter button fully down.
“REC” appears on the LCD screen, and the image and sound are recorded on the “Memory Stick.”

If you press the shutter button momentarily
The image and sound are recorded for five seconds. You can change the recording time to 10 or 15 seconds with [REC TIME SET] in the menu settings (page 34).

If you hold the shutter button down
The image and sound are recorded while the shutter button is held down for up to 60 seconds. However, when [IMAGE SIZE] in the menu setting is set to [320 (HQ)]/[320×240], the maximum recording time is 15 seconds (page 34).

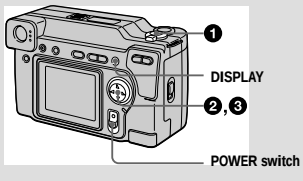
Zooming or using the self-timer, etc.

See pages 18 and 19.

LCD screen indicators during recording

Press DISPLAY to turn on/off the indicators on the LCD screen.
These indicators are not recorded. See page 65 for a detailed description of the indicators.

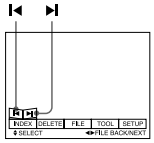
Playing back still images



1 Set the MODE selector to PLAY.
The last recorded image (still or moving) appears on the LCD screen.

2 Press ▲ on the control button to display the menu bar on the LCD screen.

3 Select the desired still image with the control button.
Press ▲/▼/◀/▶ on the control button to select I◀/▶I on the LCD screen, then press ◀/▶ on the control button.
I◀: To display the preceding image.
▶I: To display the next image.



When the menu bar is not displayed
You can directly select and play back the image with ◀/▶ on the control button.

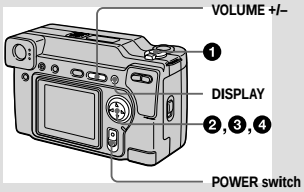
Notes

- You might not be able to correctly play back images recorded with this camera on other equipment.
- You cannot play back on this camera images larger than the maximum image size that can be recorded with this camera.

LCD screen indicators during still image playback

Press DISPLAY to turn on/off the indicators on the LCD screen.
See page 65 for a detailed description of the indicators.

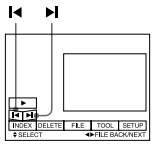
Playing back moving images



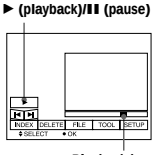
1 Set the MODE selector to PLAY.
The last recorded image (still or moving) appears on the LCD screen.

2 Press ▲ on the control button to display the menu bar on the LCD screen.

3 Select the desired moving image with the control button.
Moving images are displayed one-size smaller than still images.
Press ▲/▼/◀/▶ on the control button to select ⏮/⏭ on the LCD screen, then press ◀/▶ on the control button.
⏮: To display the preceding image.
⏭: To display the next image.



4 Select ▶ (playback) on the LCD screen with ▲/▼/◀/▶ on the control button, then press the center ●.
The moving image and sound are played back.
During playback, ▶ (playback) changes to ❚❚ (pause).



To pause playback
Select ❚❚ (pause) on the LCD screen with ▲/▼/◀/▶ on the control button, then press the center ●.

When the menu bar is not displayed
You can directly select the image with ◀/▶ on the control button, and play back the image and sound by pressing the center ●. When you press the center ● during playback, playback is paused.

Moving images recorded with the image of [320 (HQ)]
The images are displayed over the entire screen in steps ❸ and ❹.

Adjusting the volume

Press VOLUME +/– to adjust the volume.

LCD screen indicators during moving image playback

Press DISPLAY to turn on/off the indicators on the LCD screen.
See page 65 for a detailed description of the indicators.

Viewing images using a personal computer

You can view data recorded with your camera on a personal computer and attach it to e-mail. This section describes the method for installing the USB driver and viewing images on a personal computer. Be sure to also see the operation manuals for your personal computer and application software.

Note

Data recorded with your camera is stored in the following formats. Make sure that applications that support these file formats are installed on your personal computer.
- Still images (other than TEXT and uncompressed modes): JPEG format
- Moving images/audio: MPEG format
- Uncompressed mode still images: TIFF format
- TEXT mode: GIF format

Recommended computer environment

Recommended Windows environment

OS: Microsoft Windows 98, Windows 98SE
Standard installation is required.
Operation is not assured in an environment upgraded from:
Windows 3.1, Windows 95 to Windows 98 or
Windows 98 to Windows 98SE.
CPU: MMX Pentium 200 MHz or faster
The USB connector must be provided as standard.
ActiveMovie Player (DirectShow) must be installed (to play back moving pictures).

Recommended Macintosh environment

Macintosh computer with the Mac OS 8.5.1/8.6/9.0 standard installation
However, note that the update to Mac OS 9.0 should be used for the following models.
- iMac with the Mac OS 8.6 standard installation and a slot loading type CD-ROM drive
- iBook or G4 with the Mac OS 8.6 standard installation

The USB connector must be provided as standard.
QuickTime 3.2 or newer must be installed (to play back moving pictures).

Notes

- Operations are not guaranteed for either the Windows or Macintosh environment if you connect two or more USB equipment to a single personal computer at the same time (except for the USB keyboard and mouse which are provided as standard), or when using a hub.
- Depending on the type of USB equipment that is used simultaneously, some equipment may not operate.
- Operations are not guaranteed for all the recommended computer environments mentioned above.

Installing the USB driver

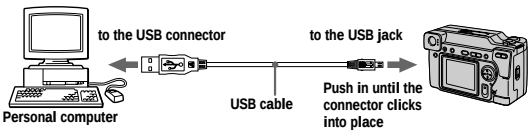
Before connecting your camera to your personal computer, install the USB driver to the computer. The USB driver is contained together with application software for viewing images on a CD-ROM which is supplied with your camera.

For Windows 98 users

1 Turn on your personal computer and allow Windows 98 to load.

2 Insert the supplied CD-ROM in the CD-ROM drive of your personal computer.

3 Connect the USB jack on your camera with the USB connector on your personal computer using the supplied USB cable.



4 Insert a "Memory Stick" into your camera, connect the AC power adaptor and turn on your camera.
"PC MODE" appears on the LCD screen of your camera and the camera is set to communication standby mode. Your personal computer recognizes the camera, and the Windows 98 Add Hardware Wizard starts.

5 Follow the on-screen messages to specify the CD-ROM drive and install the USB driver.
The Add Hardware Wizard starts twice because two different USB drivers are installed. Be sure to allow the installation to complete without interrupting it.

Note

Be sure to insert a "Memory Stick" into your camera before installing the USB driver. Otherwise, you will be unable to install the USB driver.

For Macintosh users

1 Turn on your personal computer and allow the Mac OS to load.

2 Insert the supplied CD-ROM in the CD-ROM drive of your personal computer.

❸ **Double-click the CD-ROM drive icon to open the window.**

❹ **Double-click the icon of the hard disk containing the OS to open the window.**

❺ **Move the following two driver files from the window opened in step ❸ to the "System Folder" icon in the window opened in step ❹ (drag and drop).**
- Sony USB Driver
- Sony USB Shim

❻ **When "Put these items into the Extensions folder?" appears, click "OK."**

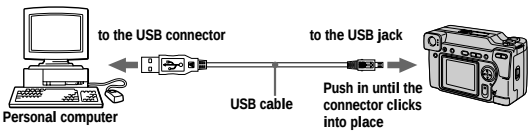
❼ **Restart your personal computer.**

Viewing images

For Windows 98 users

❶ **Turn on the power of your personal computer and allow Windows 98 to load.**

❷ **Connect one end of the USB cable to the USB jack on the camera and the other end to the USB connector on your personal computer.**



❸ **Insert a "Memory Stick" into your camera, and connect the AC power adaptor to your camera and then to a wall outlet (mains).**

❹ **Turn on the power of your camera.**
"PC MODE" appears on the LCD screen of the camera.

❺ **Open "My Computer" on Windows 98 and double click the newly recognized drive. (Example: "Removable Disk (D:)")**
The folders inside the "Memory Stick" are displayed.

❻ **Select and double-click the desired image/sound file from the folder.**
For the detailed folder and file name, see "Image file storage destinations and image files" (page 29).

Desired file type	Double-click in this order
Still image	"Dcim" folder → "100msdcf" folder → Image file
Moving image*	"Mssony" folder → "Moml0001" folder → Image file*
Audio*	"Mssony" folder → "Momlv100" folder → Audio file*
E-mail image TIFF image (uncompressed)	"Mssony" folder → "Imcif100" folder → Image file

* Copying a file to the hard disk of your personal computer before viewing it is recommended. If you play back the file directly from the "Memory Stick", the image and sound may break off.

Notes on using your personal computer

"Memory Stick"
- "Memory Stick" operations on your camera cannot be assured if the "Memory Stick" has been formatted on your personal computer.
- Do not optimize the "Memory Stick" on a Windows machine. This will shorten the "Memory Stick" life.
- Do not compress the data on the "Memory Stick." Compressed files cannot be played back on your camera.

Software
- Depending on your application software, the file size may increase when you open a still image file.
- When you load an image modified using the supplied retouch software from your personal computer to the camera or when you directly modify the image on the camera, the image format will differ so the "FILE ERROR" message may appear and you may be unable to open the file.

Communications with your personal computer

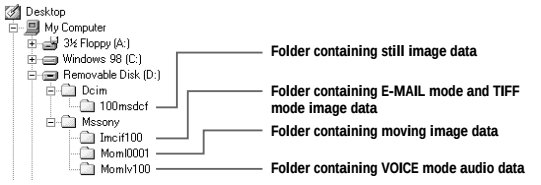
Communications between your camera and your personal computer may not recover after recovering from Suspend, Resume, or Sleep.

- Windows and ActiveMovie, DirectShow are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Macintosh and Mac OS, QuickTime are trademarks of Apple Computer, Inc.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies. Furthermore, "™" and "®" are not mentioned in each case in this manual.

Image file storage destinations and image files

Image files recorded with your camera are grouped in folders by recording mode. The meanings of the file names are as follows. □□□□ stands for any number within the range from 0001 to 9999.

For Windows 98 users (The drive recognizing the camera is "D.")



Folder	File	Meaning
100msdcf	DSC0□□□□.JPG	• Still image file recorded normally • Still image file recorded in E-MAIL mode (page 39) • Still image file recorded in TIFF mode (page 40) • Still image file recorded in VOICE mode (page 39)
	TXT0□□□□.GIF	• Still image file recorded in TEXT mode (page 40)
Imcif100	DSC0□□□□.JPG	• Small-size image file recorded in E-MAIL mode (page 39)
	DSC0□□□□.TIF	• Uncompressed image file recorded in TIFF mode (page 40)
Moml0001	MOV0□□□□.MPG	• Moving image file recorded normally
Momlv100	DSC0□□□□.MPG	• Audio file recorded in VOICE mode (page 39)

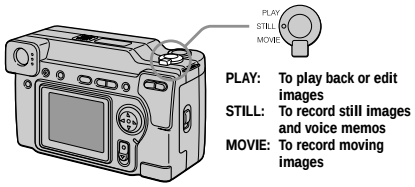
The numerical portions of the following files are the same.
— A small-size image file recorded in E-MAIL mode and its corresponding image file
— An uncompressed image file recorded in TIFF mode and its corresponding image file
— An audio file recorded in VOICE mode and its corresponding image file

Before performing advanced operations

This section describes the basic control methods that are frequently used for "Advanced operations".

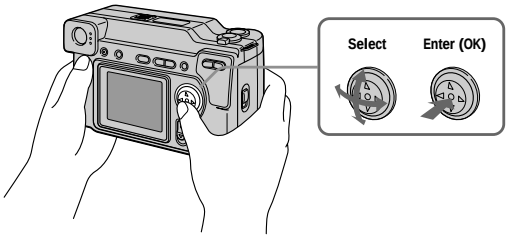
How to use the MODE selector

The MODE selector selects whether you can use your camera to record or to play back and edit images. Set the selector as follows before starting to operate your camera.

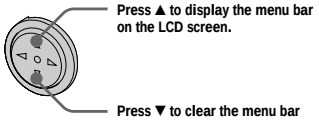


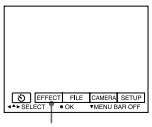
How to use the control button

The control button is used to select the indicators, images and menus appearing on the LCD screen of your camera. The operation methods that are frequently used for "Advanced operations" are described below.



Turning on/off the operation buttons (menu bar) on the LCD screen





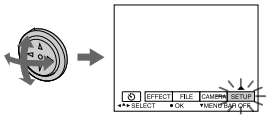
Menu bar

Note

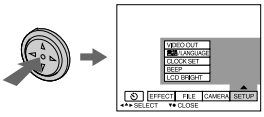
You cannot clear the menu bar during INDEX screen display (page 45).

Selecting items and images on the LCD screen

❶ Press ▲/▼/◄/► on the control button to select the item you want to set or the image you want to display.
The color of the selected item or the border of the selected image changes from blue to yellow.



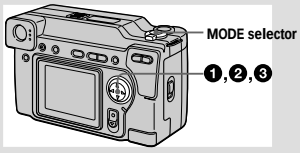
❷ Press the center ● to enter the item.
Repeat steps ❶ and ❷ to execute each function.



The "Advanced operations" section of this manual refers to selecting and entering items by the above procedure as "Select [(item name)]."

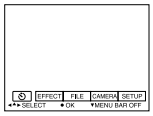
How to change the menu settings

Some of the advanced operations for your camera are executed by selecting menu items displayed on the LCD screen with the control button.

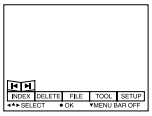


❶ Press ▲ on the control button to display the menu bar.
The menu bar appears as follows according to the setting of the MODE selector.

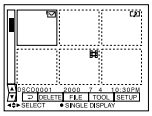
MOVIE/STILL



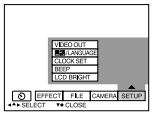
PLAY (single mode)



PLAY (INDEX mode)



❷ Select the desired item with ▲/▼/◄/► on the control button, then press the center ●.
The color of the selected item changes from blue to yellow, and when you press the center ●, the modes that can be set for that item are displayed.



❸ Select the desired mode with ▲/▼/◄/► on the control button, then press the center ●.

To clear the menu

Press ▼ on the control button until the LCD screen returns to the menu bar display in step ❶. To clear the menu bar, press ▼ again.

Menu settings

Menu items that can be modified differ depending on the setting of the MODE selector. The LCD screen shows only the items you can operate at the moment. Initial settings are indicated with ■.

(SELF TIMER)
Records with the self-timer (page 19).

EFFECT

Item	Setting	Description	MODE selector
P.EFFECT	SOLARIZE B&W SEPIA NEG.ART ■OFF	Sets the image special effects (page 44).	MOVIE STILL
DATE/ TIME	DAY&TIME DATE ■OFF	Sets whether to insert the date and time into the image (page 44).	STILL

FILE

Item	Setting	Description	MODE selector
FORMAT	OK CANCEL	Formats a "Memory Stick." Cancels formatting of a "Memory Stick."	MOVIE STILL PLAY
POS. SENSOR	ON ■OFF	Plays back images recorded with the camera on its side (vertical images) as horizontal images. This function does not work for images recorded in TEXT mode. When this camera may be subject to vibration such as when you record images from inside a moving car, set this to OFF to prevent improper horizontal/vertical judgement.	STILL
FILE NUMBER	SERIES ■NORMAL	Assigns numbers to files in sequence even if the "Memory Stick" is changed. Resets the file numbering each time the "Memory Stick" is changed.	MOVIE STILL

Item	Setting	Description	MODE selector
IMAGE SIZE	■2048×1536 2048 (3:2) 1600×1200 1280×960 640×480	Selects the image size when recording still images.	STILL
	320 (HQ) 320×240 ■160×112	Selects the MPEG image size when recording moving images.	MOVIE
REC MODE	TIFF TEXT VOICE E-MAIL ■NORMAL	Records a TIFF (uncompressed) file in addition to the JPEG file. Records a GIF file in black-and-white. Records an audio file (with still image) in addition to the JPEG file. Records a small-size (320×240) JPEG file in addition to the selected image size. Records a JPEG file in the selected image size.	STILL
REC TIME SET	15 SEC 10 SEC ■5 SEC	Adjusts the recording time for moving images.	MOVIE
ROTATE (in single mode only)	—	Rotates the still image.	PLAY
SLIDE SHOW (in single mode only)	INTERVAL REPEAT START CANCEL	Sets the slide show interval. ■3 SEC/5 SEC/10 SEC/30 SEC/1 MIN Repeats the slide show. ■ON/OFF Starts the slide show. Cancels the slide show settings and execution.	PLAY
PRINT MARK	ON ■OFF	Marks the still images to be printed (page 53). Unmarks the print mark of the still images.	PLAY
PROTECT	ON ■OFF	Protects images against accidental erasure (page 49). Releases protection of images against accidental erasure.	PLAY

CAMERA

Item	Setting	Description	MODE selector
CONVERSION	ON	Set to “ON” when using the VCL-MHG07 conversion lens (not supplied). At this time, the zoom function does not work and you cannot turn off the LCD screen. Also, note that the VAD-S70 adaptor ring needed to mount the conversion lens to your camera is not sold in some countries and regions.	MOVIE STILL
	■ OFF		
DIGITAL ZOOM	■ ON	Uses digital zoom.	STILL
	OFF	Does not use digital zoom.	
SHARPNESS	+2 to –2	Adjusts the sharpness of the image. [!] appears on the LCD screen except when set to 0.	STILL
WHITE BALANCE	IN DOOR	Sets the white balance (page 43).	MOVIE STILL
	OUT DOOR		
	HOLD		
	■ AUTO		
FLASH LEVEL	HIGH	Makes the flash level higher than normal.	STILL
	■ NORMAL	Normal setting.	
	LOW	Makes the flash level lower than normal.	
EXPOSURE	+2.0 EV to –2.0 EV	Adjusts the exposure.	MOVIE STILL

TOOL

Item	Setting	Description	MODE selector
COPY	OK	Copies an image (page 51).	PLAY
	CANCEL	Cancels copying of the image.	
RESIZE (in single mode only)	2048× 1536	Changes the recorded still image size (page 51).	PLAY
	1600× 1200		
	1280× 960		
	640× 480		
	■ CANCEL		

SETUP

Item	Setting	Description	MODE selector
DEMO	■ ON/STBY	Displayed only when you use the AC power adaptor in MOVIE or STILL mode. When ON is selected, a demonstration will start if you do not operate your camera for about 10 minutes. To stop the demonstration, turn off your camera. Select ON to make the demonstration appear again.	MOVIE STILL
	OFF		
VIDEO OUT	■ NTSC	Sets the video output signal to NTSC mode (North American countries, Japan, etc.).	MOVIE STILL PLAY
	PAL	Sets the video output signal to PAL mode (European countries, etc.).	
言語/ LANGUAGE	■ ENGLISH	Displays the menu items in English.	MOVIE STILL PLAY
	日本語/JPN	Displays the menu items in Japanese.	
CLOCK SET	—	Sets the date and time (page 13).	MOVIE STILL PLAY
BEEP	SHUTTER	Turns off the beep only. (The shutter sound is heard when you press the shutter button.)	MOVIE STILL PLAY
	■ ON	Turns on the beep/shutter sound (when you press the control button/shutter button).	
	OFF	Turns off the beep/shutter sound.	
LCD BRIGHT	▮▮▮▮▮▯▯▯▯▯	Adjusts the LCD screen brightness using the +/– buttons on the LCD screen. This has no effect on the recorded images.	MOVIE STILL PLAY

INDEX*

Displays six images at a time (PLAY (INDEX) mode) (page 45).

DELETE

Setting	Description	MODE selector
OK	Deletes the displayed image.	PLAY
CANCEL	Cancels deleting of the image.	

⮌ (RETURN)**

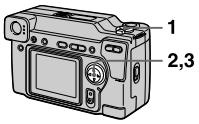
Returns to PLAY (single) mode.

* Displayed only in PLAY (single) mode.

** Displayed only in PLAY (INDEX) mode.

▶ *Various recording*

Setting the image size (IMAGE SIZE)



1 Set the MODE selector to MOVIE or STILL.

2 Select [FILE] and then [IMAGE SIZE] from the menu.

3 Select the desired image size.

Still image sizes
2048× 1536, 2048 (3:2), 1600× 1200, 1280× 960, 640× 480

Moving image sizes
320 (HQ*), 320× 240, 160× 112

* High Quality mode

The number of images or the time that you can record on a “Memory Stick” (8 MB):

Image size	Number of images or time*
2048× 1536	Approx. 5
2048 (3:2)	Approx. 5
1600× 1200	Approx. 8
1280× 960	Approx. 12
640× 480	Approx. 118
320 (HQ)	Approx. 20 (15**) sec.
320× 240	Approx. 85 (15**) sec.
160× 112	Approx. 345 (60**) sec.

* When [REC MODE] is set to [NORMAL].

** Numbers in parentheses indicate the maximum recording time during continuous recording.

When [2048 (3:2)] is selected

The image is recorded in 3:2 size to match the printing paper size ratio of 3:2.

Recording still images for e-mail (E-MAIL)

E-MAIL mode records a small-size (320×240) image at the same time as a still image. Small-size images are convenient for e-mail transmission, etc.

1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [E-MAIL] from the menu.

3 Record the image.

The number of images that you can record on a "Memory Stick" (8 MB) in E-MAIL mode.

Image size	Number of images
2048× 1536	Approx. 4
2048 (3:2)	Approx. 4
1600× 1200	Approx. 8
1280× 960	Approx. 12
640× 480	Approx. 95

To return to normal recording mode
Select [NORMAL] in step **2**.

Adding audio files to still images (VOICE)

1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [VOICE] from the menu.

3 Record the image.

If you press and release the shutter button, sound is recorded for 5 seconds.

If you hold down the shutter button, sound is recorded until you release the shutter button for up to 40 seconds.

The number of images that you can record on a "Memory Stick" (8 MB) in VOICE mode (when recording sound for five seconds):

Image size	Number of images
2048× 1536	Approx. 4
2048 (3:2)	Approx. 4
1600× 1200	Approx. 7
1280× 960	Approx. 11
640× 480	Approx. 56

To return to normal recording mode
Select [NORMAL] in step **2**.

Recording text documents (TEXT)

Text is recorded in black and white GIF format to provide a clearer image.

1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [TEXT] from the menu.

3 Record the image.

The number of images that you can record on a "Memory Stick" (8 MB) in TEXT mode:

Image size	Number of images
2048× 1536	Approx. 15 to 125
2048 (3:2)	Approx. 17 to 137
1600× 1200	Approx. 25 to 137
1280× 960	Approx. 40 to 228
640× 480	Approx. 160 to 727

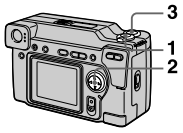
To return to normal recording mode
Select [NORMAL] in step **2**.

Notes

- If the subject is not evenly illuminated, you may be unable to record a clear image.
- Writing and reading data takes more time than in normal recording.

Recording uncompressed images (TIFF)

This mode simultaneously records still images in both TIFF format (uncompressed) and JPEG format (compressed).



1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [TIFF] from the menu.

3 Record the image.

The number of images that you can record on a "Memory Stick" (16 MB) in TIFF mode:

Image size	Number of images
2048× 1536	Approx. 1
2048 (3:2)	Approx. 1

To return to normal recording mode
Select [NORMAL] in step **2**.

Notes

- JPEG images are recorded in the image size selected by the [IMAGE SIZE] menu. TIFF images are recorded in [2048×1536] size other than when [2048 (3:2)] is selected.
- Writing data takes more time than in normal recording.
- The supplied "Memory Stick" (8 MB) does not have sufficient capacity to record uncompressed images.

Recording images in macro

1 Set the MODE selector to MOVIE or STILL.

2 Press FOCUS repeatedly until the (auto macro) indicator appears on the LCD screen.
You can record a subject as close as about 1 5/8 inches (4 cm) from the lens surface with the zoom set all the way to the W side, or about 8 inches (20 cm) with the zoom set all the way to the T side.

To return to normal recording mode
Press FOCUS repeatedly until disappears from the LCD screen.

Notes

- You cannot record images in macro with the following PROGRAM AE modes.
  — Landscape mode
  — Panfocus mode
- When recording images in macro, use the LCD screen. If you record using the finder, the range visible in the finder may differ from the actual recording range.
- You cannot record images in macro when appears on the LCD screen.

Setting the distance to the subject

Normally the focus is automatically adjusted. This function is useful when the auto focus does not work well such as in dark places.

1 Set the MODE selector to MOVIE or STILL.

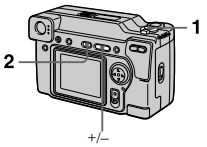
2 Press FOCUS repeatedly to achieve a sharp focus.
The (manual focus) indicator appears on the LCD screen.
You can select from the following 7 focus settings: auto (no indicator), (auto macro), 1 3/4 feet (0.5m), 3 1/4 feet (1.0m), 9 3/4 feet (3.0m), 23 feet (7.0m), ∞ (infinite)

To reactivate auto focusing
Press FOCUS repeatedly until the indicator disappears in step **2**.

Notes

- These setting distances are approximate, and should be used as a reference.
- The focus mode indicator is not displayed correctly when using a conversion lens.

Using the PROGRAM AE function



1 Set the MODE selector to MOVIE or STILL.

2 Press PROGRAM AE repeatedly to select the desired PROGRAM AE mode.

A Aperture priority mode
Makes the subject stand out against an unclear background or makes both the subject and the background stand out clearly.
Press +/– repeatedly to select an aperture value in 9 steps from F2.0 to F8.0.

S Shutter speed priority mode
Records a sharp picture of a fast-moving subject or the flow of motion of a moving subject.
Press +/– repeatedly to select a shutter speed in 19 steps from 8" to 1/1000 when recording a still image and in 13 steps from 1/8 to 1/1000 when recording a moving image.

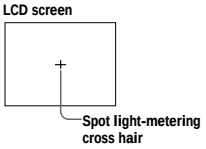
Twilight mode
Suppresses the washed-out color of a bright subject in a dark place so that you can record the subject without losing the dark atmosphere of the surroundings.

+Twilight plus mode
Increases the effectiveness of the twilight mode function.

Landscape mode
Focuses only on a distant subject to record landscapes, etc.

Panfocus mode
Changes the focus quickly and simply from a close subject to a distant subject.

Spot light-metering mode
Select this mode when there is backlight or when there is strong contrast between the subject and the background, etc. Position the point you want to record on the spot light-metering cross hair.

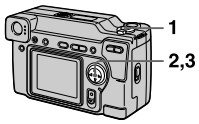


To cancel PROGRAM AE
Press PROGRAM AE repeatedly until the indicator on the LCD screen goes out.

Notes

- When you set the zoom to the T side, the value in aperture indicator may differ from the actual aperture.
- You can focus only on distant subjects in Landscape mode.
- In Panfocus mode, the zoom position and focus are fixed.
- When you record in the Twilight plus mode, we recommend that you use a tripod to prevent shaking.
- Set the forced flash when you use the flash in the following modes:
  —Twilight mode
  —Twilight plus mode
  —Landscape mode
- You cannot use the PROGRAM AE function when [REC MODE] is set to [TEXT].
- If the setting is not appropriate in aperture priority mode and shutter priority mode, the setting value indicator on the LCD screen flashes when you press the shutter button. In this case, reset the value.

Adjusting the exposure (EXPOSURE)



1 Set the MODE selector to MOVIE or STILL.

2 Select [CAMERA] and then [EXPOSURE] from the menu.

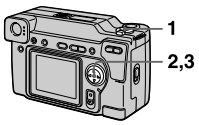
3 Select the desired exposure value.
Adjust the exposure value while checking the brightness of the background. You can select values ranging from +2.0 EV to –2.0 EV in steps of 1/3 EV.

Note

The exposure may not be adjusted properly when the subject is extremely bright or dark, or when using the flash.

Adjusting the white balance (WHITE BALANCE)

Normally the white balance is automatically adjusted.



1 Set the MODE selector to MOVIE or STILL.

2 Select [CAMERA] and then [WHITE BALANCE] from the menu.

3 Select the desired white balance setting.

IN DOOR ( )
- Places where the lighting condition changes quickly
- Under bright lighting such as photography studios
- Under sodium or mercury lamps

OUT DOOR ( )
Recording a sunrise/sunset, night scene, neon signs, or fireworks

HOLD
Recording a single-colored subject or background

AUTO (No indicator)
Adjusts the white balance automatically

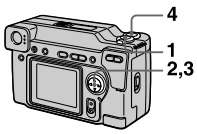
To reactivate auto adjustment

Select [AUTO] in step **3**.

Note

Select [AUTO] when recording under fluorescent lighting.

Recording the date and time on the still image (DATE/TIME)



1 Set the MODE selector to STILL.

2 Select [EFFECT] and then [DATE/TIME] from the menu.

3 Select the date and time setting.

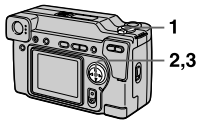
DAY&TIME
The date, hour and minutes are imposed onto the image.

DATE
The year, month and day are imposed onto the image.

OFF
The date and time are not imposed onto the image.

4 Record the image.
The date and time are not displayed during recording.
The date and time are displayed when playing back images.

Enjoying picture effects (P.EFFECT)



1 Set the MODE selector to MOVIE or STILL.

2 Select [EFFECT] and then [P.EFFECT] from the menu.

3 Select the desired mode.

SOLARIZE
The light contrast is clearer and the picture looks like an illustration.

B&W
The picture is monochrome (black and white).

SEPIA
The picture is colored like an old picture.

NEG.ART
The color and brightness of the picture are reversed.

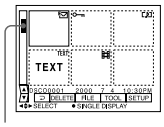
To cancel picture effect

Select [OFF] in step **3**.

Playing back six images at once (INDEX)

1 Set the MODE selector to PLAY.

2 Select [INDEX] on the LCD screen.
Six images are displayed at once (index screen).



This shows the position of the currently displayed images relative to all the recorded images.

The following marks are displayed on each image according to the image type and settings.
: Moving image file
: Voice memo file
: E-mail file
: Print mark
: Protect mark
TEXT: Text mark
TIFF: TIFF mark
(No mark): Normal recording (no settings)

To display the next (previous) index screen

Select ▲/▼ at the lower left of the LCD screen.

Displays the previous index screen

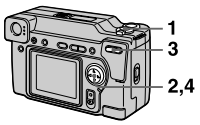
Displays the next index screen

To return to normal playback (single image)
- Select the desired image with the control button.
- Select [⮌] (RETURN).

Note

You cannot display images recorded in TEXT mode on the INDEX screen.

Enlarging a part of the still image (Zoom and trimming)



1 Set the MODE selector to PLAY.

2 Display the image to be enlarged.

3 Zoom in/out the image with the zoom button.
The zoom scaling indicator appears on the LCD screen.

4 Press the control button repeatedly to select the desired part of the image.
▲: The image moves downward
▼: The image moves upward
◀: The image moves rightward
▶: The image moves leftward

To return to the normal size

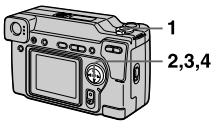
Zoom in with the zoom button until the zoom scaling indicator (×1.1) disappears from the screen, or simply press ●.

To record an enlarged image (trimming)

①Enlarge the image.
②Press the shutter button. The image is recorded at 640× 480 size, then the display returns to the image display before enlargement.

Notes
- You cannot trim images recorded in TEXT mode or uncompressed images.
- The maximum zoom magnification is 5× the original image, regardless of the image size.
- The picture quality of trimmed images may deteriorate.
- The original picture remains even after trimming.
- The trimmed image is recorded as the newest file.

Rotating a still image (ROTATE)



1 Set the MODE selector to PLAY.

2 Display the image to rotate.

3 Select [FILE] and then [ROTATE] from the menu.

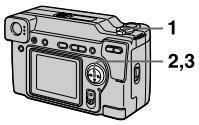
4 Rotate the image clockwise ↘ or counterclockwise ↙, then select [RETURN].

Notes

- You may not be able to rotate protected images or images recorded with other equipment.
- Also, when viewing images on a personal computer, the image rotation information may not be reflected depending on the application software.
- You cannot rotate protected or uncompressed images, or images recorded in TEXT mode.

Playing back the images in order (SLIDE SHOW)

This function is useful for checking the recorded images or for presentations, etc.



1 Set the MODE selector to PLAY.

2 Select [FILE] and then [SLIDE SHOW] from the menu.
Set the following items.

INTERVAL
1 MIN (one minute), 30 SEC (30 seconds), 10 SEC (10 seconds), 5 SEC (5 seconds), 3 SEC (3 seconds)

REPEAT
ON: Plays back images in a continuous loop until [RETURN] is selected.
OFF: After all images have been played back, the slide show ends.

3 Select [START] with the control button.
The slide show begins.

To cancel the slide show
Select [CANCEL] in step **2** or **3**.

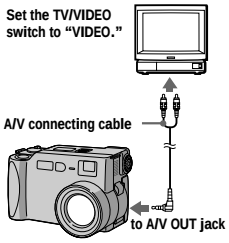
To skip to the next/previous image during slide show playback
Select ⏮/⏭ at the lower left of the LCD screen.

Note

The [INTERVAL] setting time is approximate, and may vary depending on the played back image size or other factors.

Viewing images on a TV screen

Before connecting your camera, be sure to turn off the TV.



1 Connect the A/V connecting cable to the A/V OUT jack of your camera and to the audio/video input jacks of the TV.
If your TV has stereo type audio input jacks, connect the audio plug of the A/V connecting cable to the Lch jack.

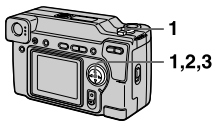
2 Turn on the TV, then start playback on your camera.
The playback image appears on the TV screen.

Note

You cannot use a TV that has an antenna (aerial) connector only.

Preventing accidental erasure (PROTECT)

The 🔑 (protect) indicator appears on protected images.



In single mode

1 Set the MODE selector to PLAY, then display the image to protect.

2 Select [FILE], [PROTECT], and then [ON] from the menu.
The displayed image is protected and 🔑 appears.

To release protection
Select [OFF] in step **2**.

In INDEX mode

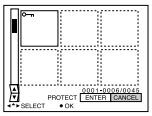
1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [FILE], [PROTECT], and then [ALL] or [SELECT] from the menu.

3 When you select [ALL]
Select [ON].
All the images recorded in "Memory Stick" are protected.

When you select [SELECT]
Select all the images to protect with the control button, then select [ENTER].

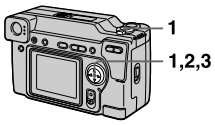
The selected images are protected.



To release protection
If you selected [ALL] in step **2**, select [OFF]. If you selected [SELECT] in step **2**, select the images to unprotect with the control button, then select [ENTER].

Deleting images (DELETE)

You cannot delete protected files.



In single mode

1 Set the MODE selector to PLAY, then display the image to delete.

2 Select [DELETE] and then [OK] from the menu.
The image is deleted.

In INDEX mode

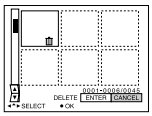
1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [DELETE] and then [ALL] or [SELECT] from the menu.

3 When you select [ALL]
Select [ENTER].
All unprotected images are deleted.

When you select [SELECT]
Select all the images to delete with the control button, then select [ENTER].

The 🗑 (delete) indicator appears on the selected images and these images are deleted.

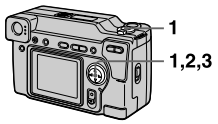


To cancel deleting
Select [CANCEL] in step **2** or **3**.

Note

If there are files on the "Memory Stick" with names having the same last 4 digits as the file name of the image to be deleted, these files are also deleted at the same time.

Changing the recorded still image size (RESIZE)



1 Set the MODE selector to PLAY and display the image to resize.

2 Select [TOOL] and then [RESIZE] from the menu.

3 Select the desired image size.
2048× 1536, 1600× 1200, 1280× 960, 640× 480
The changed image is recorded, then the display returns to the image display before resizing.

To return to the original size
Select [CANCEL] in step **3**.

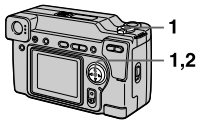
Notes

- You cannot change the size of images recorded in TEXT mode or uncompressed images.
- When you change from a small size to a large size, the picture quality deteriorates.
- The original image is retained even after resizing.
- The resized image is recorded as the newest file.

Copying images (COPY)

You can copy images to another "Memory Stick."

In single mode



1 Set the MODE selector to PLAY, then display the image to copy.

2 Select [TOOL], [COPY], and then [OK] from the menu.
"FILE ACCESS" appears.

3 When "CHANGE MEMORY STICK" appears, eject the "Memory Stick."
"INSERT MEMORY STICK" appears.

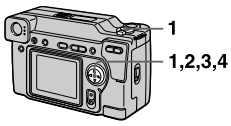
4 Insert the "Memory Stick" on which to copy the image.
"RECORDING" appears. When copying is completed, "COMPLETE" appears.
To end copying, select [EXIT].

To copy the image to another "Memory Stick"
Select [CONTINUE] after step **4** and insert a new "Memory Stick."

Notes

If you do not select [EXIT] after "COMPLETE" appears and instead insert a new "Memory Stick," the same image is copied again.

In INDEX mode



1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [TOOL], [COPY], and then [SELECT] from the menu.

3 Select the image to copy.
The ✓ (select) indicator appears on the image.

4 Select [ENTER].
"MEMORY STICK ACCESS" appears.

5 When "CHANGE MEMORY STICK" is displayed, eject the "Memory Stick."
"INSERT MEMORY STICK" appears.

6 Insert another "Memory Stick."
"RECORDING" appears. When copying is completed, "COMPLETE" appears.
To end copying, select [EXIT].

To copy the image to another "Memory Stick"
Select [CONTINUE] after step **6** and insert a new "Memory Stick."

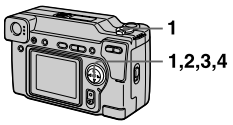
To cancel copying part-way
Change the MODE selector setting or turn off the power.

Notes

- If you do not select [EXIT] after "COMPLETE" appears and instead insert a new "Memory Stick," the same image is copied again.
- You cannot copy uncompressed images.
- You cannot copy images that are bigger than 5 MB at once. If "NOT ENOUGH MEMORY" appears or ✓ flashes on the INDEX screen, cancel some images to copy and try again.

Selecting still images to print (PRINT MARK)

You can mark a print mark on still images recorded with your camera. This mark is convenient when you have images printed at a shop that conforms with the DPOF (Digital Print Order Format) standard.



In single mode

1 Set the MODE selector to PLAY and display the image you want to print.

2 Select [FILE], [PRINT MARK], and then [ON] from the menu.
The 🖶 (print) mark is displayed on the image.

To unmark the print mark
Select [OFF] in step **2**.

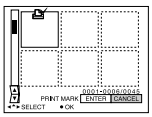
In INDEX mode

1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [FILE], [PRINT MARK], and then [SELECT] from the menu.

3 Select the images to mark with the control button.

4 Select [ENTER].
🖶 of the selected images change from green to white.



To unmark selected print marks
Select the images to unmark in step **3** with the control button, then select [ENTER].

To unmark all the print marks
Select [FILE], [PRINT MARK], [ALL] and then [OFF] from the menu.
🖶 of all images are unmarked.

Notes

- You cannot mark moving images or images recorded in TEXT mode.
- If you mark an image recorded in TIFF mode with a print mark, only the uncompressed image is printed, and the JPEG image recorded at the same time is not printed.

Precautions

On cleaning

Cleaning the LCD screen
Wipe the screen surface with a cleaning cloth (not supplied) or a LCD cleaning kit (not supplied) to remove fingerprints, dust, etc.

Cleaning the camera surface
Clean the camera surface with a soft cloth slightly moistened with water, then wipe the surface dry. Do not use any type of solvent such as thinner, alcohol or benzene as this may damage the finish or the casing.

After using your camera at the seashore or other dusty locations
Clean your camera carefully. Otherwise, the salty air may corrode the metal fittings or dust may enter the inside of your camera, causing a malfunction.

Note on operating temperature

Your camera is designed for use between the temperatures of 32˚F and 104˚F (0˚C and 40˚C). Recording in extremely cold or hot places that exceed this range is not recommended.

On moisture condensation

If the camera is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside or outside the camera. Should this occur, the camera will not operate properly.

Moisture condensation occurs easily when:

- The camera is brought from a cold location such as a ski slope into a warmly heated room.
- The camera is taken from an air-conditioned room or car interior to the hot outdoors, etc.

How to prevent moisture condensation
When bringing the camera from a cold place to a warm place, seal the camera in a plastic bag and allow it to adapt to conditions at the new location over a period of time (about an hour).

If moisture condensation occurs
Turn off the camera and wait about an hour for the moisture to evaporate. Note that if you attempt to record with moisture remaining inside the lens, you will be unable to record clear images.

On AC power adaptor

- Unplug the unit from the wall outlet (mains) when you are not using the unit for a long time.
- To disconnect the power cord (mains lead), pull it out by the plug. Never pull the power cord (mains lead) itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord (mains lead) forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM reception and video operation are disturbed.
- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  — Extremely hot or cold
  — Dusty or dirty
  — Very humid
  — Vibrating

On battery pack

- Use only the specified charger with the charging function.
- To prevent accident from a short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 140˚F (60˚C), such as in a car parked in the sun or under direct sunlight.
- Keep the battery pack dry.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Install the battery pack to the camera securely.
- Charging while some capacity remains does not affect the original battery capacity.

If any problem occurs, unplug your camera and contact your nearest Sony dealer.

On internal rechargeable button battery

This camera has an internal rechargeable button battery for maintaining the date and time and other settings regardless of whether the power is on or off. This rechargeable button battery is constantly charged as long as you are using the camera. However, if you use the camera for only short periods it discharges gradually, and if you do not use the camera at all for about half a year it becomes completely discharged. In this case, be sure to charge this rechargeable button battery before using the camera.
However, even if this rechargeable button battery is not charged, you can still use the camera as long as you do not record the date and time.

Charging method
Connect the camera to a wall outlet (mains) with the AC power adaptor, or install a charged battery pack, and leave the camera for 24 hours or more with the POWER switch set to OFF.

On “Memory Sticks”

“Memory Stick” is a new compact, portable and versatile IC recording medium with a data capacity that exceeds a floppy disk. “Memory Stick” is specially designed for exchanging and sharing digital data among “Memory Stick” compatible products. Because it is removable, “Memory Stick” can also be used for external data storage.

There are two types of “Memory Sticks”: general “Memory Sticks” and “MagicGate Memory Sticks” that are equipped with the MagicGate* copyright protection technology.
You can use both types of “Memory Stick” with your camera. However, because your camera does not support the MagicGate standards, data recorded with your camera is not subject to MagicGate copyright protection.

* MagicGate is copyright protection technology that uses encryption technology.

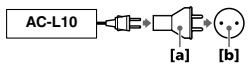
Notes

- Do not remove the “Memory Stick” while reading or writing data.
- Data may be damaged if:
  — you remove the “Memory Stick” or turn off your camera while reading or writing data.
  — you use the “Memory Stick” in a location subject to the effects of static electricity or noise.
- Do not attach any other material than the supplied label on the labeling position.
- Attach the label so that it does not stick out from the proper attachment location.
- When you carry or store the “Memory Stick,” put it in its supplied case.
- Do not touch the terminals of a “Memory Stick” with your hand or a metal object.
- Do not strike, bend or drop the “Memory Stick.”
- Do not disassemble or modify the “Memory Stick.”
- Do not allow the “Memory Stick” to get wet.

“Memory Stick”, MEMORY STICK, “MagicGate Memory Stick” and MG are trademarks of Sony Corporation.
“MagicGate” and MAGICGATE are trademarks of Sony Corporation.

Using your camera abroad

Power sources
You can use your camera in any country or area with the supplied battery charger within 100 V to 240 V AC, 50/60 Hz. Use the supplied AC power adaptor **[a]**, if necessary, depending on the design of the wall outlet (mains) **[b]**.



Watching the playback picture on TV
If you want to view the playback picture on a TV, you need a TV having a video input jack and a video connecting cable.
The color system of the TV must be the same as that of your digital still camera. TV color systems differ from country to country. Check the following list:

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Columbia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, Czech Republic, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Troubleshooting

If you experience trouble with your camera, first check the following items. Should your camera still not operate properly after you have made these checks, consult your Sony dealer or local authorized Sony service facility. If code displays (C:□□:□□) appear on the LCD screen, the self-diagnosis display function is working (page 62).

Symptom	Cause and/or Solution
Your camera does not work.	• You are not using an “InfoLITHIUM” battery pack. → Use an “InfoLITHIUM” battery pack (page 8). • The battery level is low (the indicator appears on the LCD screen). → Charge the battery pack (page 9). • The AC power adaptor is not connected securely. → Connect it firmly to the DC IN jack of your camera and a wall outlet (mains) (page 12). • The built-in microcomputer is not working properly. → Disconnect and then reconnect all power sources after one minute. Then turn the power on by sliding the POWER switch down and check that the camera works properly.
Your camera cannot record images.	• The MODE selector is set to PLAY. → Set it to MOVIE or STILL (pages 16, 21). • No “Memory Stick” has been inserted into your camera. → Insert a “Memory Stick” (page 15). • The write-protect tab on the “Memory Stick” is set to LOCK. → Set it to the recording position.
The picture is out of focus.	• Your camera is not in macro recording mode when you shoot a subject that is about 1 5/8 to 9 7/8 inches (4 to 25 cm) away from the lens. → Set the macro recording mode (page 41). → Press the zoom button to set to the W side.
The resizing function does not work.	• You cannot resize moving images and text images.
You cannot display a print mark.	• You cannot display print marks on moving images and text images.
The picture is noisy.	• Your camera is placed near a TV or other equipment that uses strong magnets. → Move your camera away from the TV, etc.

Symptom	Cause and/or Solution
The picture is too dark.	• You are shooting a subject with a light source behind the subject. → Adjust the exposure (page 43). → Adjust the brightness of the LCD screen (page 36).
The flash does not work.	• The flash is set to . → Set the flash to auto (no indicator), or (page 20). • PROGRAM AE is set to the Twilight, Twilight plus, or Panfocus mode. → Cancel the mode (page 42) or set the flash to . • The MODE selector is set to MOVIE. → Set it to STILL.
The date and time are recorded incorrectly.	• The date and time are not set correctly. → Set the correct date and time (page 13).
Vertical streaks appear when you are shooting a very bright subject.	• The smear phenomenon is happening. → This is not a malfunction.
The battery life is short.	• You are recording/playing back images under extremely cold temperatures. • The battery pack is not charged enough. → Charge the battery pack fully. • The battery pack is dead. → Replace the battery pack with a new one (page 8).
The battery remaining indicator is incorrect.	• You have used the camera for a long time in an extremely hot or an extremely cold location. • The battery pack is dead. → Replace the battery pack with a new one (page 8). • The battery pack is discharged. → Install a charged battery pack (pages 8, 9).
Sufficient battery remaining indicator is displayed but the power runs out soon.	→ Fully charge the battery pack (page 9).

Symptom	Cause and/or Solution
Nothing appears in the display window or the indicators flash during charging.	• The AC power adaptor is disconnected. →Firmly connect the power cord to the wall outlet (page 12). • The battery pack has malfunctioned. →Contact your Sony dealer or local authorized Sony service facility. • The battery pack is not installed correctly. →Install the battery pack correctly (page 8).
The zoom does not work.	• PROGRAM AE is set to the Panfocus mode. →Cancel the Panfocus mode (page 42). • [CONVERSION] in the menu setting is set to [ON]. →Set it to [OFF].
Digital zoom does not function.	• You cannot use digital zoom to record moving pictures.
Your camera cannot play back images.	• The MODE selector is set to STILL or MOVIE. →Set it to PLAY (page 22).
The image and sound are interfered by noise when you play back an image on a personal computer.	• You are playing back the file directly from the "Memory Stick." →Copy the file to the hard disk of the personal computer and then play back the file from the hard disk (page 28).
The image cannot be played back on a personal computer.	→Consult the personal computer or software manufacturer.
Your camera cannot delete an image.	• The image is protected. →Cancel the protection (page 49).
The power turns off suddenly.	• With the MODE selector set to STILL or MOVIE, if you do not operate the camera for about three minutes while the power is on, the camera turns off automatically to prevent wearing down the battery. →Turn on the camera. • The battery is discharged. →Replace it with a charged battery.
The image does not appear on the TV screen.	• The video output signal setting of your camera is incorrect. →Change the setting (page 48).
A file error occurs when you play back a file.	• The image size is larger than 2048× 1536. →Use an image size of 2048× 1536 or smaller.
The PROGRAM AE function does not work.	• The camera is set to text mode. →Cancel text mode (page 42).

Symptom	Cause and/or Solution
The LCD screen freezes momentarily.	• This is a characteristic of the system and is not a malfunction.
Your personal computer does not recognize your camera.	• The camera is turned off. →Turn on the camera. • The battery level is low. →Use the AC power adaptor (page 12). • The USB cable is not connected firmly. →Disconnect the USB cable, and connect it again firmly. Make sure that "PC MODE" is displayed on the LCD screen (page 27). • The USB connectors on your personal computer are connected to other equipment besides the keyboard, the mouse, and your camera. →Disconnect the USB cables except for the ones connected to the keyboard, the mouse, and your camera (page 25).

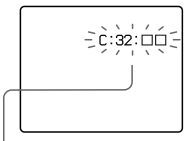
Warning and notice messages

Various messages appear on the LCD screen. Check the corresponding descriptions in the following list.

Message	Meaning
NO MEMORY STICK	No "Memory Stick" has been inserted.
SYSTEM ERROR	Turn the power off and on again.
MEMORY STICK ERROR	The inserted "Memory Stick" cannot be used with your camera, or is damaged.
FORMAT ERROR	Failed to format the "Memory Stick."
MEMORY STICK LOCKED	The write-protect tab on the "Memory Stick" is set to the LOCK position.
NO MEMORY SPACE	The capacity of the "Memory Stick" is full, and you cannot record or copy images.
NO FILE	No image has been recorded on the "Memory Stick."
FILE ERROR	An error occurred while playing back the image.
FILE PROTECT	The image is protected against erasure.
for "InfoLITHIUM" battery only	The battery is not the "InfoLITHIUM" type.
NOT ENOUGH MEMORY	The images you want to copy are too big to copy with your camera.
DIRECTORY ERROR	A directory with the same name already exists.
IMAGE SIZE OVER	You are playing back an image of a size that cannot be played back with your camera.
INVALID OPERATION	You are playing back a file that was created on equipment other than your camera.
⚠	The battery level is low or zero.
🔑	The image is protected.

Self-diagnosis display

Your camera has a self-diagnosis display. This function displays the camera condition on the LCD screen with a combination of a letter and four digits of numbers. If this occurs, check the following code chart. The code informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



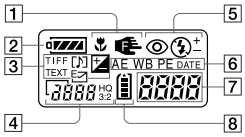
Self-diagnosis display
- C:□□:□□
  You can reverse the camera malfunction yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony service facility.

First three digits	Cause and/or Corrective Action
C:32:□□	• There is trouble with your camera's hardware or zooming function. →Turn the power off and on again.
C:13:□□	• An unformatted "Memory Stick" is inserted. →Format the "Memory Stick" (page 33). • The inserted "Memory Stick" cannot be used with your camera, or is damaged. →Insert a new "Memory Stick" (page 15).
E:61:□□ E:91:□□	• A camera malfunction that you cannot reverse has occurred. →Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit service code. (example: E:61:10)

If you are unable to solve the problem even after trying the corrective actions a few times, contact your Sony dealer or local authorized Sony service facility.

When a self-diagnosis display appears
The error display appears on the display window (page 64).

Display window indicators



1 **Macro/focus mode indicator**

2 **Battery remaining indicator**

3 **Recording/EV level indicator**

4 **Image size indicator**

5 **Flash mode/flash level indicator**

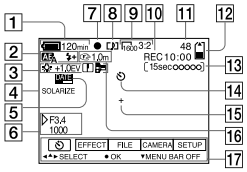
6 **PROGRAM AE indicator**
White balance indicator
Picture effect indicator
Date/time indicator

7 **Battery usable time indicator (displayed only during charging)**
Number of recorded images
Error display
Err: Some kind of misoperation has occurred. Check the self-diagnosis display on the LCD screen (page 62) and take the appropriate corrective action.
LENS: A problem has occurred with lens drive. Turn the camera on and off several times, and if the problem persists, contact your Sony dealer or authorized Sony service facility.

8 **"Memory Stick" remaining indicator**

LCD screen indicators

The indicators during recording



1 **Battery remaining indicator**

2 **PROGRAM AE/flash level/flash mode indicator**

3 **White balance/EV level/ sharpness/conversion mode indicator**

4 **Picture effect indicator**

5 **Date/time indicator**

6 **Aperture/shutter speed indicator**

7 **AE lock indicator/Focus lock indicator**

8 **Recording mode indicator**

9 **Image size indicator**

10 **Self-diagnosis function indicator/recording time indicator**

11 **Number of recorded images**

12 **Remaining memory capacity indicator**

13 **Moving image/VOICE recording time indicator**

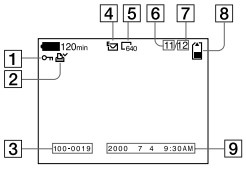
14 **Self-timer indicator**

15 **Spot light-metering indicator**

16 **Focus/macro mode indicator**

17 **Menu bar and guide menu**
They appear by pressing ▲ on the control button and disappear by pressing ▼ of it.

When playing back still images



1 **Protect indicator**

2 **Print mark indicator**

3 **File name**

4 **Recording mode indicator**

5 **Image size indicator**

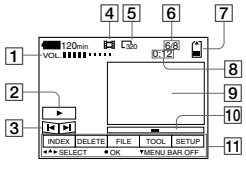
6 **Image number**

7 **Number of stored images in "Memory Stick"**

8 **Remaining memory capacity indicator**

9 **Recording date of the playback image/menu bar and guide menu**

When playing back moving images



1 **VOL. (Volume) indicator**

2 **Playback/pause buttons**
▶: during pause
❚❚: during playback

3 **Fast-forward/rewind buttons**

4 **Recording mode indicator**

5 **Image size indicator**

6 **Image number/number of stored images in "Memory Stick"**

7 **Remaining memory capacity indicator**

8 **Counter**

9 **Playback image**

10 **Play bar**

11 **Menu bar and guide menu**

9-929-814-41

Sony Corporation
Personal VIDEO Products Company

2000C0520-1
Printed in Japan © 2000. 3
Published by Safety & Service Engineering Dept.

DSC-S70

SERVICE MANUAL

Level 2

Ver 1.0 2000. 03

Self Diagnosis Supported model

Cyber-shot Digital Still Camera

InfoLITHIUM M

MEMORY STICK

US Model
Canadian Model
AEP Model
UK Model
E model
Hong Kong Model
Australian Model
Chinese Model
Korea Model
Tourist Model
Japanese Model

This service manual contains information for Japanese model as well.

On the SY-58 board

This service manual procides the information that is premised the circuit board replacement service and not intended repair inside the SY-58 board.
Therefore, schematic diagram, printed wiring board and electrical parts list of the SY-58 board are not shown.
The following pages are not shown.

SY-58 board

Schematic diagram ..... Pages 4-15 to 4-30
Printed wiring board ..... Pages 4-11 to 4-14
Electrical parts list ..... Pages 6-11 to 6-15

The above-described information is shown in service manual Level 3.

SPECIFICATIONS

System

Image device
1/1.8 type color CCD
Lens
3× zoom lens
f = 7 – 21 mm
(34 – 102 mm when converted into a 35 mm still camera)
F = 2.0 – 2.5
Exposure control
Automatic exposure
White balance
Automatic, Indoor, Outdoor, Hold
Data system
Movie: MPEG1
Still: JPEG, GIF (in TEXT mode), TIFF
Audio with still image: MPEG1 (Monaural)
Recording medium
"Memory Stick"
Flash
Recommended recording distance:
11 7/8 inches to 8 1/4 feet
(0.3 m to 2.5 m)

Output connector

A/V OUT (Monaural)
Minijack
Video: 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance: 2.2 kΩ
Digital I/O (USB)
Special minijack
External flash jack
Minijack

LCD screen

Used LCD panel
2 type TFT (Thin Film Transistor active matrix) drive
Total number of dots
123 200 (560×220) dots

General

Used battery pack
NP-FM50
Power requirements
7.2 V
Power consumption (during recording)
3.9 W
Operation temperature
32˚F to 104˚F
(0˚C to 40˚C)
Storage temperature
–4˚F to +140˚F
(–20˚C to +60˚C)
Maximum dimensions
4 5/8×2 7/8×2 5/8 inches
(117×71×64 mm) (w/h/d)
Mass
Approx. 15 oz (423 g)
(including battery pack NP-FM50, "Memory Stick," shoulder strap and lens cap etc.)
Built-in microphone
Electret condenser microphone
Built-in speaker
Dynamic speaker

AC-L10 AC power adaptor

Power requirements
100 to 240 V AC, 50/60 Hz
Rated output voltage
DC 8.4 V, 1.5 A in operating mode
Operation temperature
32˚F to 104˚F (0˚C to 40˚C)
Storage temperature
–4˚F to +140˚F
(–20˚C to +60˚C)
Maximum dimensions
5×1 9/16×2 1/2 inches
(125×39×62 mm) (w/h/d)
Mass
Approx. 10 oz (280 g)

NP-FM50 battery pack

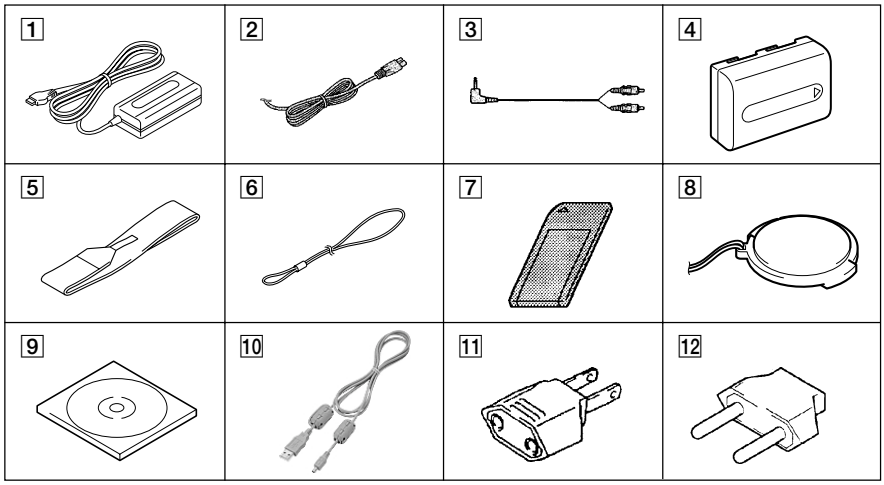
Used battery
Lithium ion battery
Maximum voltage
DC 8.4 V
Nominal voltage
DC 7.2 V
Capacity
8.5 Wh (1 180 mAh)

Design and specifications are subject to change without notice.

DIGITAL STILL CAMERA

SONY®

Supplied accessories



1 **AC-L10 AC power adaptor**

2 **Power cord** (1)

3 **A/V connecting cable** (1)

4 **NP-FM50 Battery pack** (1)

5 **Shoulder strap** (1)

6 **Lens cap strap** (1)

7 **Memory Stick (8MB)** (1)

8 **Lens cap** (1)

9 **Bundle soft (2000)** (1)
(Compact Disk)

10 **USB cable** (1)

11 **2-pin conversion adaptor** (1)
E model

12 **2-pin conversion adaptor** (1)
Tourist model

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270 ˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

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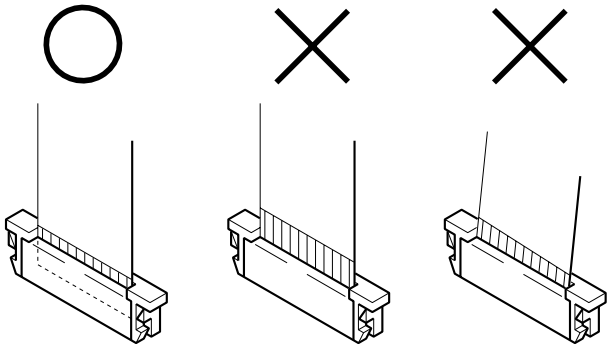
.* The color reproduction frame is shown on page 118.

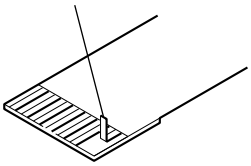
SERVICE NOTE

• NOTE FOR REPAIR

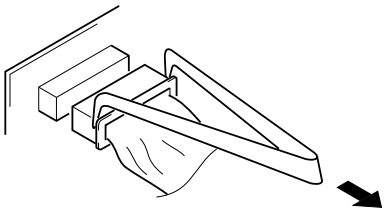
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



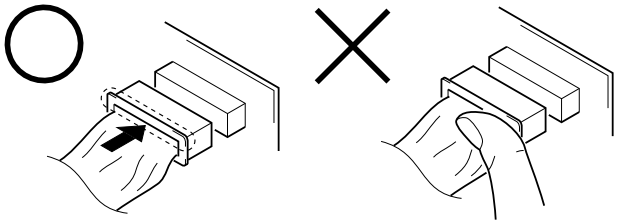
Cut and remove the part of gilt which comes off at the point. (Take care that there are some pieces of gilt left inside)



When remove a connector, don't pull at wire of connector.
Be in danger of the snapping of a wire.



When installing a connector, don't press down at wire of connector.
Be in danger of the snapping of a wire.

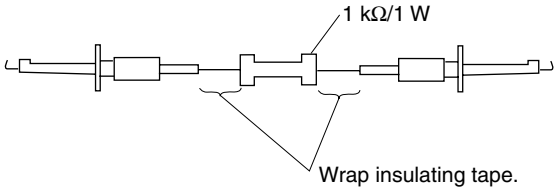


[Discharging of the FLASH unit's charging capacitor]

The charging capacitor of the FLASH unit is charged up to the maximum 300 V potential.
There is a danger of electric shock by this high voltage when the battery is handled by hand. The electric shock is caused by the charged voltage which is kept without discharging when the main power of the DSC-S70 is simply turned off. Therefore, the remaining voltage must be discharged as described below.

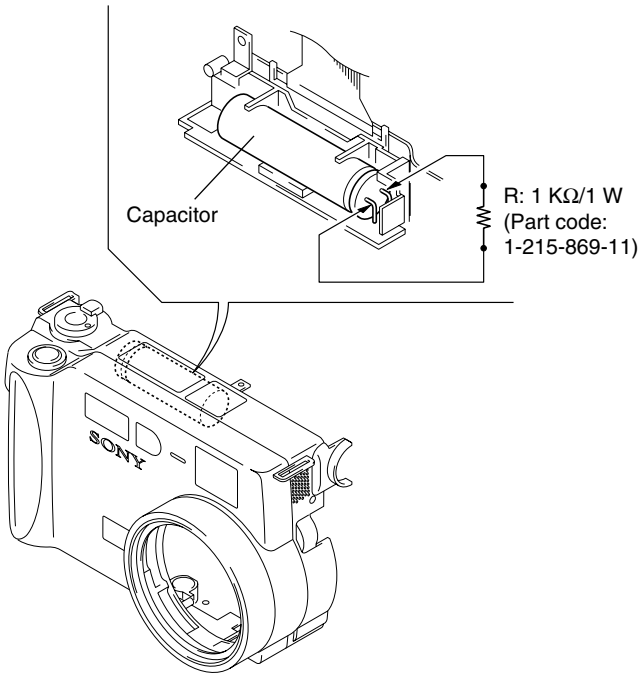
Preparing the Short Jig

To preparing the short jig, a small clip is attached to each end of a resistor of 1 kΩ /1 W (1-215-869-11).
Wrap insulating tape fully around the leads of the resistor to prevent electrical shock.



Discharging the Capacitor

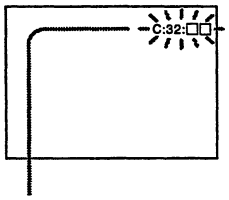
Short-circuit between the positive and the negative terminals of charged capacitor with the short jig about 10 seconds.



[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by ☐☐) will differ depending on the state of the camera.



Self-diagnosis display

- C: ☐☐
  You can reverse the camera malfunction yourself. (However, contact your Sony dealer or local authorized Sony service facility when you cannot recover from the camera malfunction.)
- E: ☐☐
  Contact your Sony dealer or local authorized Sony service facility.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:☐☐	Turn the power off and on again.	Trouble with hardware.	SYSTEM ERROR
C:13:☐☐	Format the "Memory stick".	Unformatted memory stick is inserted.	FORMAT ERROR
	Insert a new "Memory Stick".	Memory stick is broken.	MEMORY STICK ERROR
E:61:☐☐ *1	Checking of lens drive circuit.	When failed in the focus and zoom initialization.	—
E:91:☐☐	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged. *2	

Note: The error code is cleared if the battery is removed, except defective flash, unit.
*1: The error display is given in two ways.
*2: When the flash charging failed, Page : D, Address: 67. Data: 04 are written.
After repair, be sure to write Page: D, address: 67. Data: 00.

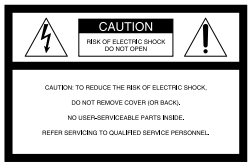
SECTION 1 GENERAL

This section is extracted from DSC-S70 instruction manual.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

For the Customers in the U.S.A.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Never expose the battery pack to temperature above 140˚F (60˚C), such as in a car parked in the sun or under direct sunlight.

If you have any questions about this product, you may call:
Sony Customer Information Center
1-800-222-SONY (7669)
or write to:
Sony Customer Information Center
1 Sony Drive, Mail Drop #T1-11, Park Ridge, NJ 07656

CAUTION
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Declaration of Conformity

Trade Name:	SONY
Model No.:	DSC-S70
Responsible Party:	Sony Electronics Inc.
Address:	1 Sony Drive, Park Ridge, NJ 07656 USA
Telephone No.:	201-930-6972

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the Customers in the U.S.A. and Canada

DISPOSAL OF LITHIUM ION BATTERY.
LITHIUM ION BATTERY.
DISPOSE OF PROPERLY.

You can return your unwanted lithium ion batteries to your nearest Sony Service Center or Factory Service Center.

Note:
In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)
For the Sony Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution:
Do not handle damaged or leaking lithium ion battery.

For the Customers in Canada

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

NOTICE FOR THE CUSTOMERS IN THE UNITED KINGDOM

A moulded plug complying with BS 1363 is fitted to this equipment for your safety and convenience.

Should the fuse in the plug supplied need to be replaced, a 5 AMP fuse approved by ASTA or BSI to BS 1362, (i.e. marked with ⓐ or ⓑ mark) must be used.

If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

For the Customers in Germany

Directive:EMC Directive 89/336/EEC.92/31/EEC
This equipment complies with the EMC regulations when used under the following circumstances:
• Residential area
• Business district
• Light-industry district
(This equipment complies with the EMC standard regulations EN55022 Class B.)

Attention

The electromagnetic fields at the specific frequencies may influence the picture and sound of this camera.

"Memory Stick"

CE N50

For the Customers in CANADA

This Class B digital apparatus complies with Canadian ICES-003.

For the Customers in the U.S.A.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Be sure to read the following before using your camera

Trial recording
Before you record one-time events, you may want to make a trial recording to make sure that the camera is working correctly.

No compensation for contents of the recording
Contents of the recording cannot be compensated for if recording or playback is not possible due to a malfunction of your camera, etc.

Notes on image data compatibility
• This camera conforms with the Design Rules for Camera File Systems universal standard established by the JEIDA (Japan Electronic Industries Development Association). You cannot play back on your camera still images recorded on other equipment (DCR-TRV890/TRV900/TRV900E, DSC-D700, DSC-D770) that does not conform with this universal standard. (These models are not sold in some areas.)
• Playback of images recorded with your camera on other equipment and playback of images recorded or edited with other equipment on your camera are not guaranteed.

Precaution on copyright
Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Do not shake or strike the camera
In addition to malfunctions and inability to record images, this may render the "Memory Stick" unusable or image data breakdown, damage or loss may occur.

Do not aim the camera at the sun or other bright light
This may cause irrecoverable damage to your eyes.

LCD screen and lens
• The LCD screen is manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen. These points are normal in the manufacturing process and do not affect the recording in any way. Over 99.99% of the pixels are operational for effective use.
• Be careful when placing the camera near a window or outdoors. Exposing the LCD screen or the lens to direct sunlight for long periods may cause malfunctions.

Do not get the camera wet
When taking pictures outdoors in the rain or under similar conditions, be careful not to get the camera wet. If moisture condensation occurs, refer to page 54 and follow the instructions on how to remove it before using the camera.

Back up recommendation
To avoid the potential risk of data loss, always copy (back up) data to a disk.

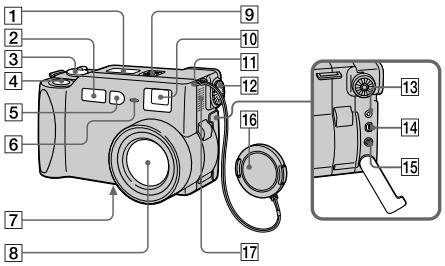
Handling of the movable lens
This camera uses a movable lens.
Be careful not to strike or apply excessive force to the lens portion.

About the Carl Zeiss lens
This camera is equipped with a Carl Zeiss lens which is capable of reproducing fine images. The lens for this camera uses the MTF* measurement system for cameras developed jointly by Carl Zeiss, in Germany, and Sony Corporation, and offers the same quality as other Carl Zeiss lenses.
* MTF is the abbreviation of Modulation Transfer Function/Factor, a numeric value indicating the ability to reproduce the subject contrast.

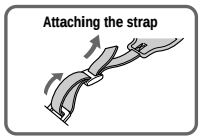
Getting started

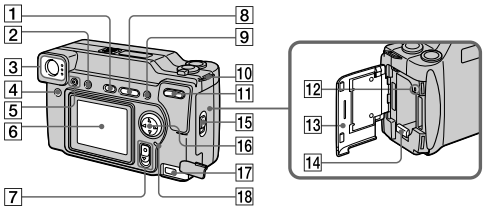
Identifying the parts

See the pages in parentheses for details of operation.



1 **Display window**
2 **Flash (20)**
3 **MODE selector (30)**
4 **Shutter button (16) (21)**
5 **Photocell window for flash**
Do not block while recording.
6 **Self-timer/recording lamp**
7 **Tripod receptacle (bottom surface)**
Use a tripod with a screw length of less than 9/32 inch (6.5 mm). You will be unable to firmly secure the camera to tripods having longer screws, and may damage the camera.
8 **Lens**
When cleaning the lens, first return the lens to the fully retracted position and turn off the power, then gently wipe the lens.
9 **Built-in microphone**
Do not touch while recording.
10 **Finder window**
11 **Hook for lens cap/strap**
12 **Finder adjustment dial (17)**
13 **⚡ (External flash) jack**
14 **USB jack (26) (27)**
15 **A/V OUT jack (48)**
Audio output is monaural.
16 **Lens cap**
Be sure to remove the lens cap before turning on your camera.
17 **Speaker**



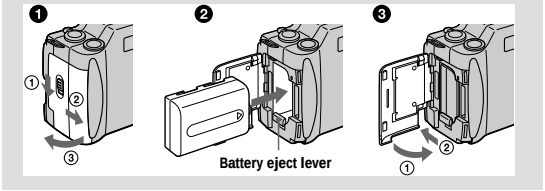


1 **PROGRAM AE button (42)**
2 **LCD ON/OFF button**
3 **Finder**
Self-timer/recording lamp (red)
AE lock lamp (green)
Strobe charge lamp (orange)
4 **FOCUS button (41)**
5 **Flash button**
6 **LCD screen**
7 **POWER switch**
8 **VOLUME +/– button**
PROGRAM AE +/– button
9 **DISPLAY button**
10 **Hook for lens cap/strap**
11 **Zoom button**
12 **Access lamp (15)**
13 **Battery/"Memory Stick" cover**
14 **Battery eject lever (8)**
15 **OPEN switch**
16 **Control button**
17 **DC IN jack (9) (12)**
18 **POWER lamp**

Preparing the power supply

Installing the battery pack

Your camera operates only with the "InfoLITHIUM" NP-FM50 battery pack* (M series). You cannot use any other battery pack.



1 Open the battery/"Memory Stick" cover.
Open the cover while sliding the OPEN switch in the direction of the arrow.

2 Install the battery pack.
Insert the battery pack with the ▶ mark facing toward the battery compartment as illustrated.

3 Close the battery/"Memory Stick" cover.

To remove the battery pack

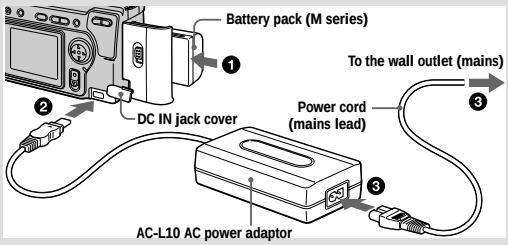
Open the battery/"Memory Stick" cover. Slide the battery eject lever downward, and remove the battery pack.
Be careful not to drop the battery pack when removing it.

**** What is "InfoLITHIUM"?***

"InfoLITHIUM" is a lithium ion battery pack which can exchange information such as battery consumption with compatible video equipment. This unit is compatible with the "InfoLITHIUM" battery pack (M series). "InfoLITHIUM" M series battery packs have the mark. "InfoLITHIUM" is a trademark of Sony Corporation.

Charging the battery pack

You cannot charge the battery pack while your camera is turned on. Be sure to turn off your camera before charging.



1 Insert the battery pack into your camera.

2 Open the DC IN jack cover and connect the DC connecting cable to the DC IN jack of your camera with the ▲ mark facing up.

3 Connect the power cord (mains lead) to the AC power adaptor and then to a wall outlet (mains).
The CHARGE lamp in the display window flashes when charging begins. When the CHARGE lamp goes off, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack inserted for about one hour after normal charge is completed until the battery remaining indicator and "FULL" is displayed alternately in the display window.

Battery remaining indicator

The LCD screen on the camera shows the remaining time for which you can still record or play back images.
This indication may not be entirely accurate depending on the conditions of use and the operating environment.

Auto power-off function

If you do not operate the camera for about three minutes during recording, the camera turns off automatically to prevent wearing down the battery. To use the camera again, slide down the POWER switch to turn on the camera again.

Charging time

Battery pack	Full charge (min.)	Normal charge (min.)
NP-FM50 (supplied)	150	90

Approximate time to charge a completely discharged battery pack using the AC-L10 AC power adaptor.

Battery life and number of images that can be recorded/played back

STILL mode recording*

	NP-FM50 (supplied)	
	Battery life (min.)	Number of images
LCD screen ON	120 (110)	1600 (1400)
LCD screen OFF	150 (140)	2000 (1800)

STILL mode playback**

	NP-FM50 (supplied)	
	Battery life (min.)	Number of images
LCD screen ON	220 (210)	4400 (4200)

Approximate battery life and number of images that can be recorded/played back with a fully charged battery pack at a temperature of 77˚F (25˚C), 640×480 image size and in NORMAL recording mode. Numbers in parentheses indicate the time when you use a normally charged battery pack.

* Recording at about 4-second intervals
** Playing back single images in order at about 3-second intervals

MOVIE mode recording

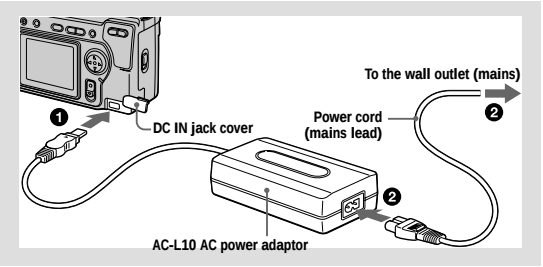
	NP-FM50 (supplied)	
	LCD screen OFF (min.)	LCD screen ON (min.)
Continuous recording	150 (140)	130 (120)

Approximate time that can be recorded with a fully charged battery pack at a temperature of 77˚F (25˚C) and 160×112 image size. Numbers in parentheses indicate the time when you use a normally charged battery pack.

Notes

- The battery life and number of images will be decreased if you use your camera at low temperatures, use the flash, repeatedly turn the power on/off or use the zoom.
- The capacity of the “Memory Stick” is limited. The above figures are a guide when you continuously record/play back while replacing the “Memory Stick.”
- “----” appears in the display window until the battery usable time is calculated.
- During charging, the indicators in the display window may not appear correctly or may flash in the following cases.
  - — When the battery pack is not installed correctly.
  - — When the AC power adaptor is disconnected.
  - — When the battery pack has malfunctioned.
- When you turn the LCD screen on and off, it takes about one minute for the correct battery remaining time to appear.
- If sufficient battery remaining time is indicated but the power runs out soon, fully charge the battery so that the correct battery remaining time appears.
- Do not short the DC plug of the AC power adaptor with a metallic object, as this may cause malfunction.
- Do not expose the battery pack to water.

Using the AC power adaptor



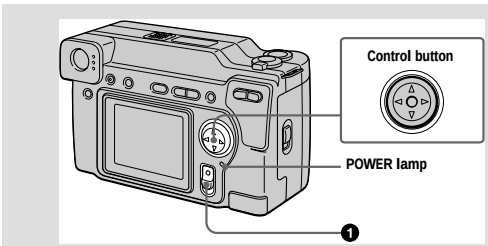
❶ Open the DC IN jack cover and connect the DC connecting cable to the DC IN jack of your camera with the ▲ mark facing up.

❷ Connect the power cord (mains lead) to the AC power adaptor and then to a wall outlet (mains).

Using a car battery
Use Sony DC adaptor/charger.

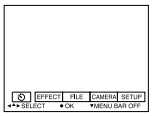
Setting the date and time

When you first use your camera, set the date and time. If these are not set, the CLOCK SET screen appears whenever you turn on your camera for recording.

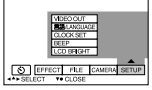


❶ Slide down the POWER switch to turn on the power.
The POWER lamp lights up.

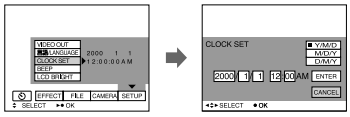
❷ Press ▲ on the control button.
The menu bar appears on the LCD screen.



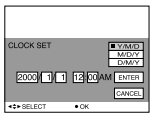
❸ Select [SETUP] with ► on the control button, then press the center ●.



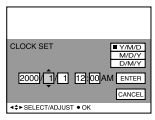
❹ Select [CLOCK SET] with ▲/▼ on the control button, then press the center ●.



❺ Select the desired date display format with ▲/▼ on the control button, then press the center ●.
Select from [Y/M/D] (year/month/day), [M/D/Y] (month/day/year) or [D/M/Y] (day/month/year).

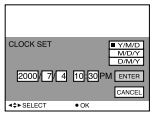


❻ Select the year, month, day, hour or minute item you want to set with ◄/► on the control button.
The item to be set is indicated with ▲/▼.



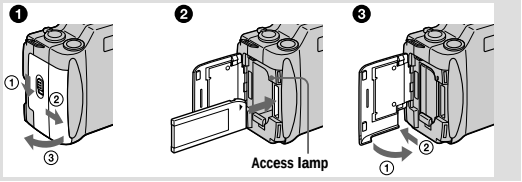
❼ Set the numeric value with ▲/▼ on the control button, then press the center ● to enter it.
After entering the number, ▲/▼ moves to the next item.
If you selected [D/M/Y] in step ❺, set the time on a 24-hour cycle.

❽ Select [ENTER] with ► on the control button, then press the center ● at the desired moment to begin clock movement.
The date and time are entered.



To cancel the date and time setting
Select [CANCEL] with ▲/▼/◄/► on the control button, then press the center ●.

Inserting the "Memory Stick"



1 Open the battery/"Memory Stick" cover.
Open the cover while sliding the OPEN switch in the direction of the arrow.

2 Insert the "Memory Stick."
Insert the "Memory Stick" with the ▶ mark facing toward the battery compartment as illustrated until it clicks.

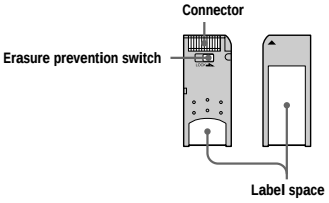
3 Close the battery/"Memory Stick" cover.

Removing the "Memory Stick"

Open the battery/"Memory Stick" cover, then press the "Memory Stick" once lightly.

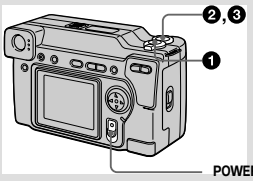
Notes

- Insert the "Memory Stick" firmly until it clicks, otherwise a message such as "MEMORY STICK ERROR" will be displayed.
- Never remove the "Memory Stick" or turn off the power while the access lamp is lit up.
- You cannot record or edit images on a "Memory Stick" if the erasure prevention switch is set to the LOCK position.



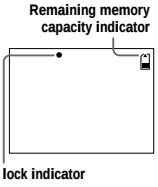
Recording still images

Still images are recorded in JPEG format.
To record still images, slide the POWER switch down to turn on the power and insert a "Memory Stick."



1 Set the MODE selector to STILL.

2 Press and hold the shutter button halfway down and check the image.
While the AE lock indicator ● (green) is flashing, the image freezes momentarily, but is not yet recorded. When the camera finishes the automatic adjustments*, the AE lock indicator ● lights up and the camera is ready for recording.
To cancel the recording, release the shutter button.



3 Press the shutter button fully down.
The shutter sounds and the image is recorded on the "Memory Stick."
When "REC" disappears, you can record the next image.

* Exposure and focus are automatically adjusted.

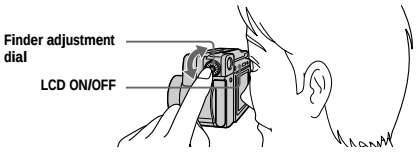
The number of images you can record on a "Memory Stick"
See pages 38 to 40.

Notes

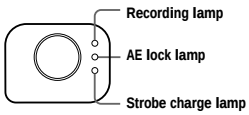
- Do not touch the lens portion while it is operating.
- While the image is being recorded on the "Memory Stick," do not shake or strike the camera. Also, do not turn the power off, or remove the battery pack or "Memory Stick."
- When recording a bright subject, the LCD screen color may change after AE lock, but this does not affect the recorded image.

Recording images with the finder

Turn the finder adjustment dial until the image appears clearly within the finder, then record the image.



Indicators in the finder



To turn off the LCD screen

Press LCD ON/OFF.

Notes

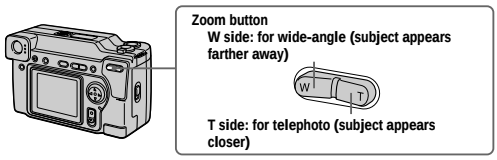
- When you record a subject closer than 3 1/4 feet (1 m), the positions of the finder and the lens differ, so record using the LCD screen.
- You cannot view digitally zoomed images with the finder. Check these images using the LCD screen.
- You cannot turn off the LCD screen when [DEMO] or [CONVERSION] are set to [ON] in the menu settings.

Checking the last recorded image (Quick Review)

You can check the last recorded image by clearing the menu bar from the screen (page 32) and pressing ◀ on the control button. To return to the normal recording mode, press lightly on the shutter button or select [RETURN] with ◀/▶ on the control button and then press the center ●. You can also delete the image first by selecting [DELETE] on the Quick Review screen with ◀/▶ on the control button and pressing the center ●, and then selecting [OK] with ▲/▼ on the control button and pressing the center ●.

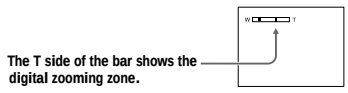
Using the zoom feature

The lens portion moves during zoom operation. Be careful not to touch the lens portion while it is operating.



Minimum focal distance to the subject
W side: About 9 7/8 inches (25 cm) or more
T side: About 9 7/8 inches (25 cm) or more
To record even closer subjects, see page 41.

Digital zoom function
This camera has a digital zoom function.
Digital zoom enlarges the image by digital processing and it starts to function when zoom exceeds 3×.



Using digital zoom

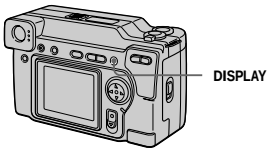
- The maximum zoom magnification is 6×.
- Digital zooming deteriorates the picture quality. When digital zoom is not necessary, set [DIGITAL ZOOM] to [OFF] in the menu settings (page 35).

Notes

- Zoom does not work while recording moving images.
- Digital zoom does not work for moving images.
- Digitally zoomed images do not appear in the finder.

LCD screen indicators during recording

Press DISPLAY to turn on/off the indicators on the LCD screen.
See page 65 for a detailed description of the indicated items.

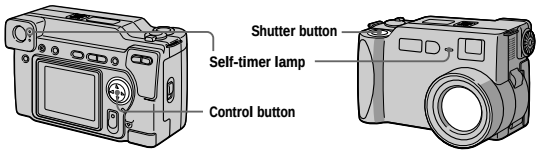


Notes

- You cannot turn off the self-timer indicators and some of the indicators used in advanced operations.
- The indicators on the LCD screen are not recorded.

Using the self-timer

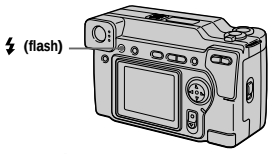
When you use the self-timer function, the subject is recorded about 10 seconds after you press the shutter button.



Select (self-timer) indicator on the LCD screen with ▲/▼/◀/▶ on the control button, then press the center ●. The (self-timer) indicator appears on the LCD screen, and about 10 seconds after you press the shutter button, the subject is recorded. The self-timer lamp flashes after you press the shutter button until the shutter is released.

Recording images with the flash

The initial setting is auto (no indicator). In this mode, the flash automatically strobes when the surroundings become dark. When you change the flash mode, press the (flash) repeatedly so that the flash mode indicator appears on the LCD screen.



Each time you press the (flash), the indicator changes as follows.
(No indicator) → → → → (No indicator)

Auto red-eye reduction:	The flash strobes before recording to reduce the red-eye phenomenon.
Forced flash:	The flash strobes regardless of the surrounding brightness.
No flash:	The flash does not strobe.

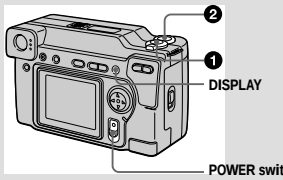
You can change the brightness of the flash (FLASH LEVEL) in the menu settings (page 35).

Notes

- The recommended shooting distance using the built-in flash is 31/32 feet to 8 1/3 feet (0.3 m to 2.5 m).
- Attaching a conversion lens (not supplied) may block the light from the flash or cause the lens shadow to appear.
- You cannot use an external flash and the built-in flash at the same time.
- Auto red-eye reduction may not produce the desired red-eye reduction effects depending on individual differences, the distance to the subject, if the subject does not see the pre-strobe, or other conditions. In addition, red-eye reduction effects are also difficult to obtain if you set the shutter to a slow speed in the PROGRAM AE shutter priority mode.
- The flash effect is not obtained easily when you use forced flash in a bright location.

Recording moving images

Moving images with audio are recorded in MPEG format.
To record moving images, slide the POWER switch down to turn on the power and insert a “Memory Stick.”



1 Set the MODE selector to MOVIE.

2 Press the shutter button fully down.
“REC” appears on the LCD screen, and the image and sound are recorded on the “Memory Stick.”

If you press the shutter button momentarily
The image and sound are recorded for five seconds. You can change the recording time to 10 or 15 seconds with [REC TIME SET] in the menu settings (page 34).

If you hold the shutter button down
The image and sound are recorded while the shutter button is held down for up to 60 seconds. However, when [IMAGE SIZE] in the menu setting is set to [320 (HQ)]/[320×240], the maximum recording time is 15 seconds (page 34).

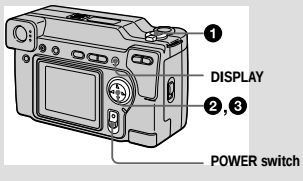
Zooming or using the self-timer, etc.

See pages 18 and 19.

LCD screen indicators during recording

Press DISPLAY to turn on/off the indicators on the LCD screen.
These indicators are not recorded. See page 65 for a detailed description of the indicators.

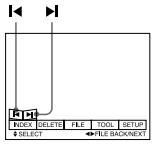
Playing back still images



1 Set the MODE selector to PLAY.
The last recorded image (still or moving) appears on the LCD screen.

2 Press ▲ on the control button to display the menu bar on the LCD screen.

3 Select the desired still image with the control button.
Press ▲/▼/◀/▶ on the control button to select ⏮/⏭ on the LCD screen, then press ◀/▶ on the control button.
⏮: To display the preceding image.
⏭: To display the next image.



When the menu bar is not displayed
You can directly select and play back the image with ◀/▶ on the control button.

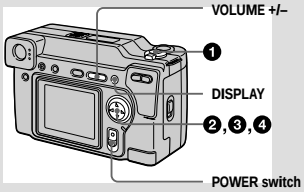
Notes

- You might not be able to correctly play back images recorded with this camera on other equipment.
- You cannot play back on this camera images larger than the maximum image size that can be recorded with this camera.

LCD screen indicators during still image playback

Press DISPLAY to turn on/off the indicators on the LCD screen.
See page 65 for a detailed description of the indicators.

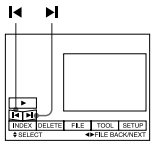
Playing back moving images



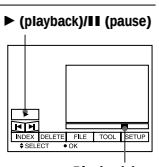
1 Set the MODE selector to PLAY.
The last recorded image (still or moving) appears on the LCD screen.

2 Press ▲ on the control button to display the menu bar on the LCD screen.

3 Select the desired moving image with the control button.
Moving images are displayed one-size smaller than still images.
Press ▲/▼/◀/▶ on the control button to select ⏮/⏭ on the LCD screen, then press ◀/▶ on the control button.
⏮: To display the preceding image.
⏭: To display the next image.



4 Select ▶ (playback) on the LCD screen with ▲/▼/◀/▶ on the control button, then press the center ●.
The moving image and sound are played back.
During playback, ▶ (playback) changes to ❚❚ (pause).



To pause playback
Select ❚❚ (pause) on the LCD screen with ▲/▼/◀/▶ on the control button, then press the center ●.

When the menu bar is not displayed
You can directly select the image with ◀/▶ on the control button, and play back the image and sound by pressing the center ●. When you press the center ● during playback, playback is paused.

Moving images recorded with the image of [320 (HQ)]
The images are displayed over the entire screen in steps ❸ and ❹.

Adjusting the volume

Press VOLUME +/– to adjust the volume.

LCD screen indicators during moving image playback

Press DISPLAY to turn on/off the indicators on the LCD screen.
See page 65 for a detailed description of the indicators.

Viewing images using a personal computer

You can view data recorded with your camera on a personal computer and attach it to e-mail. This section describes the method for installing the USB driver and viewing images on a personal computer. Be sure to also see the operation manuals for your personal computer and application software.

Note

Data recorded with your camera is stored in the following formats. Make sure that applications that support these file formats are installed on your personal computer.
- Still images (other than TEXT and uncompressed modes): JPEG format
- Moving images/audio: MPEG format
- Uncompressed mode still images: TIFF format
- TEXT mode: GIF format

Recommended computer environment

Recommended Windows environment

OS: Microsoft Windows 98, Windows 98SE
Standard installation is required.
Operation is not assured in an environment upgraded from:
Windows 3.1, Windows 95 to Windows 98 or
Windows 98 to Windows 98SE.
CPU: MMX Pentium 200 MHz or faster
The USB connector must be provided as standard.
ActiveMovie Player (DirectShow) must be installed (to play back moving pictures).

Recommended Macintosh environment

Macintosh computer with the Mac OS 8.5.1/8.6/9.0 standard installation
However, note that the update to Mac OS 9.0 should be used for the following models.
- iMac with the Mac OS 8.6 standard installation and a slot loading type CD-ROM drive
- iBook or G4 with the Mac OS 8.6 standard installation

The USB connector must be provided as standard.
QuickTime 3.2 or newer must be installed (to play back moving pictures).

Notes

- Operations are not guaranteed for either the Windows or Macintosh environment if you connect two or more USB equipment to a single personal computer at the same time (except for the USB keyboard and mouse which are provided as standard), or when using a hub.
- Depending on the type of USB equipment that is used simultaneously, some equipment may not operate.
- Operations are not guaranteed for all the recommended computer environments mentioned above.

Installing the USB driver

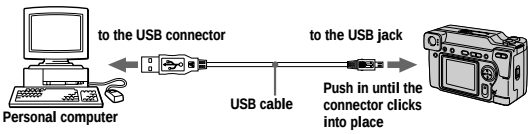
Before connecting your camera to your personal computer, install the USB driver to the computer. The USB driver is contained together with application software for viewing images on a CD-ROM which is supplied with your camera.

For Windows 98 users

1 Turn on your personal computer and allow Windows 98 to load.

2 Insert the supplied CD-ROM in the CD-ROM drive of your personal computer.

3 Connect the USB jack on your camera with the USB connector on your personal computer using the supplied USB cable.



4 Insert a "Memory Stick" into your camera, connect the AC power adaptor and turn on your camera.
"PC MODE" appears on the LCD screen of your camera and the camera is set to communication standby mode. Your personal computer recognizes the camera, and the Windows 98 Add Hardware Wizard starts.

5 Follow the on-screen messages to specify the CD-ROM drive and install the USB driver.
The Add Hardware Wizard starts twice because two different USB drivers are installed. Be sure to allow the installation to complete without interrupting it.

Note

Be sure to insert a "Memory Stick" into your camera before installing the USB driver. Otherwise, you will be unable to install the USB driver.

For Macintosh users

1 Turn on your personal computer and allow the Mac OS to load.

2 Insert the supplied CD-ROM in the CD-ROM drive of your personal computer.

❸ **Double-click the CD-ROM drive icon to open the window.**

❹ **Double-click the icon of the hard disk containing the OS to open the window.**

❺ **Move the following two driver files from the window opened in step ❸ to the "System Folder" icon in the window opened in step ❹ (drag and drop).**
- Sony USB Driver
- Sony USB Shim

❻ **When "Put these items into the Extensions folder?" appears, click "OK."**

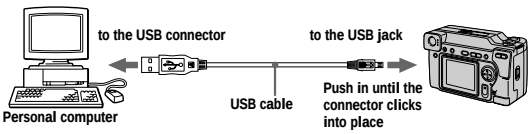
❼ **Restart your personal computer.**

Viewing images

For Windows 98 users

❶ **Turn on the power of your personal computer and allow Windows 98 to load.**

❷ **Connect one end of the USB cable to the USB jack on the camera and the other end to the USB connector on your personal computer.**



❸ **Insert a "Memory Stick" into your camera, and connect the AC power adaptor to your camera and then to a wall outlet (mains).**

❹ **Turn on the power of your camera.**
"PC MODE" appears on the LCD screen of the camera.

❺ **Open "My Computer" on Windows 98 and double click the newly recognized drive. (Example: "Removable Disk (D:)")**
The folders inside the "Memory Stick" are displayed.

❻ **Select and double-click the desired image/sound file from the folder.**
For the detailed folder and file name, see "Image file storage destinations and image files" (page 29).

Desired file type	Double-click in this order
Still image	"Dcim" folder → "100msdcf" folder → Image file
Moving image*	"Mssony" folder → "Moml0001" folder → Image file*
Audio*	"Mssony" folder → "Momlv100" folder → Audio file*
E-mail image TIFF image (uncompressed)	"Mssony" folder → "Imcif100" folder → Image file

* Copying a file to the hard disk of your personal computer before viewing it is recommended. If you play back the file directly from the "Memory Stick", the image and sound may break off.

Notes on using your personal computer

"Memory Stick"
- "Memory Stick" operations on your camera cannot be assured if the "Memory Stick" has been formatted on your personal computer.
- Do not optimize the "Memory Stick" on a Windows machine. This will shorten the "Memory Stick" life.
- Do not compress the data on the "Memory Stick." Compressed files cannot be played back on your camera.

Software
- Depending on your application software, the file size may increase when you open a still image file.
- When you load an image modified using the supplied retouch software from your personal computer to the camera or when you directly modify the image on the camera, the image format will differ so the "FILE ERROR" message may appear and you may be unable to open the file.

Communications with your personal computer

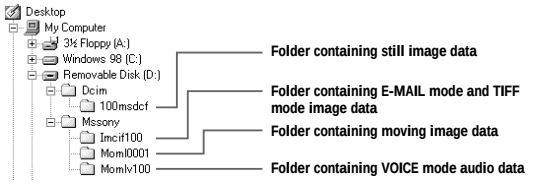
Communications between your camera and your personal computer may not recover after recovering from Suspend, Resume, or Sleep.

- Windows and ActiveMovie, DirectShow are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Macintosh and Mac OS, QuickTime are trademarks of Apple Computer, Inc.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies. Furthermore, "™" and "®" are not mentioned in each case in this manual.

Image file storage destinations and image files

Image files recorded with your camera are grouped in folders by recording mode. The meanings of the file names are as follows. □□□□ stands for any number within the range from 0001 to 9999.

For Windows 98 users (The drive recognizing the camera is "D.")



Folder	File	Meaning
100msdcf	DSC0□□□□.JPG	• Still image file recorded normally • Still image file recorded in E-MAIL mode (page 39) • Still image file recorded in TIFF mode (page 40) • Still image file recorded in VOICE mode (page 39)
	TXT0□□□□.GIF	• Still image file recorded in TEXT mode (page 40)
Imcif100	DSC0□□□□.JPG	• Small-size image file recorded in E-MAIL mode (page 39)
	DSC0□□□□.TIF	• Uncompressed image file recorded in TIFF mode (page 40)
Moml0001	MOV0□□□□.MPG	• Moving image file recorded normally
Momlv100	DSC0□□□□.MPG	• Audio file recorded in VOICE mode (page 39)

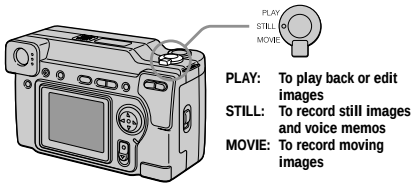
The numerical portions of the following files are the same.
— A small-size image file recorded in E-MAIL mode and its corresponding image file
— An uncompressed image file recorded in TIFF mode and its corresponding image file
— An audio file recorded in VOICE mode and its corresponding image file

Before performing advanced operations

This section describes the basic control methods that are frequently used for "Advanced operations".

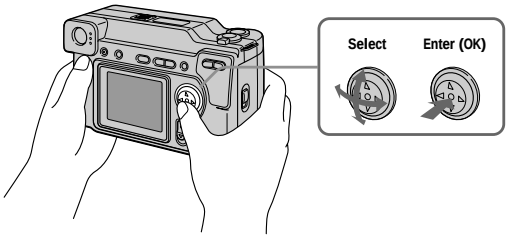
How to use the MODE selector

The MODE selector selects whether you can use your camera to record or to play back and edit images. Set the selector as follows before starting to operate your camera.

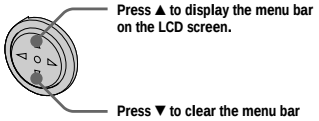


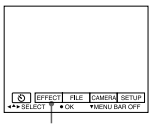
How to use the control button

The control button is used to select the indicators, images and menus appearing on the LCD screen of your camera. The operation methods that are frequently used for "Advanced operations" are described below.



Turning on/off the operation buttons (menu bar) on the LCD screen





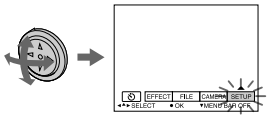
Menu bar

Note

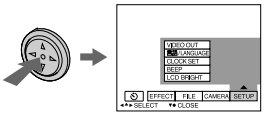
You cannot clear the menu bar during INDEX screen display (page 45).

Selecting items and images on the LCD screen

❶ Press ▲/▼/◀/▶ on the control button to select the item you want to set or the image you want to display.
The color of the selected item or the border of the selected image changes from blue to yellow.



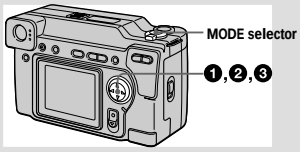
❷ Press the center ● to enter the item.
Repeat steps ❶ and ❷ to execute each function.



The "Advanced operations" section of this manual refers to selecting and entering items by the above procedure as "Select [(item name)]."

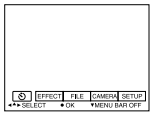
How to change the menu settings

Some of the advanced operations for your camera are executed by selecting menu items displayed on the LCD screen with the control button.

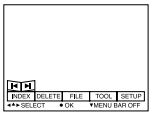


❶ Press ▲ on the control button to display the menu bar.
The menu bar appears as follows according to the setting of the MODE selector.

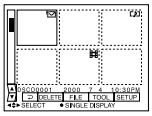
MOVIE/STILL



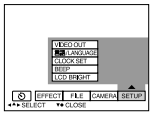
PLAY (single mode)



PLAY (INDEX mode)



❷ Select the desired item with ▲/▼/◀/▶ on the control button, then press the center ●.
The color of the selected item changes from blue to yellow, and when you press the center ●, the modes that can be set for that item are displayed.



❸ Select the desired mode with ▲/▼/◀/▶ on the control button, then press the center ●.

To clear the menu

Press ▼ on the control button until the LCD screen returns to the menu bar display in step ❶. To clear the menu bar, press ▼ again.

Menu settings

Menu items that can be modified differ depending on the setting of the MODE selector. The LCD screen shows only the items you can operate at the moment. Initial settings are indicated with ■.

(SELF TIMER)
Records with the self-timer (page 19).

EFFECT

Item	Setting	Description	MODE selector
P.EFFECT	SOLARIZE B&W SEPIA NEG.ART ■OFF	Sets the image special effects (page 44).	MOVIE STILL
DATE/ TIME	DAY&TIME DATE ■OFF	Sets whether to insert the date and time into the image (page 44).	STILL

FILE

Item	Setting	Description	MODE selector
FORMAT	OK CANCEL	Formats a "Memory Stick." Cancels formatting of a "Memory Stick."	MOVIE STILL PLAY
POS. SENSOR	ON ■OFF	Plays back images recorded with the camera on its side (vertical images) as horizontal images. This function does not work for images recorded in TEXT mode. When this camera may be subject to vibration such as when you record images from inside a moving car, set this to OFF to prevent improper horizontal/vertical judgement.	STILL
FILE NUMBER	SERIES ■NORMAL	Assigns numbers to files in sequence even if the "Memory Stick" is changed. Resets the file numbering each time the "Memory Stick" is changed.	MOVIE STILL

Item	Setting	Description	MODE selector
IMAGE SIZE	■2048×1536 2048 (3:2) 1600×1200 1280×960 640×480	Selects the image size when recording still images.	STILL
	320 (HQ) 320×240 ■160×112	Selects the MPEG image size when recording moving images.	MOVIE
REC MODE	TIFF TEXT VOICE E-MAIL ■NORMAL	Records a TIFF (uncompressed) file in addition to the JPEG file. Records a GIF file in black-and-white. Records an audio file (with still image) in addition to the JPEG file. Records a small-size (320×240) JPEG file in addition to the selected image size. Records a JPEG file in the selected image size.	STILL
REC TIME SET	15 SEC 10 SEC ■5 SEC	Adjusts the recording time for moving images.	MOVIE
ROTATE (in single mode only)	—	Rotates the still image.	PLAY
SLIDE SHOW (in single mode only)	INTERVAL REPEAT START CANCEL	Sets the slide show interval. ■3 SEC/5 SEC/10 SEC/30 SEC/1 MIN Repeats the slide show. ■ON/OFF Starts the slide show. Cancels the slide show settings and execution.	PLAY
PRINT MARK	ON ■OFF	Marks the still images to be printed (page 53). Unmarks the print mark of the still images.	PLAY
PROTECT	ON ■OFF	Protects images against accidental erasure (page 49). Releases protection of images against accidental erasure.	PLAY

CAMERA

Item	Setting	Description	MODE selector
CONVERSION	ON	Set to “ON” when using the VCL-MHG07 conversion lens (not supplied). At this time, the zoom function does not work and you cannot turn off the LCD screen. Also, note that the VAD-S70 adaptor ring needed to mount the conversion lens to your camera is not sold in some countries and regions.	MOVIE STILL
	■ OFF		
DIGITAL ZOOM	■ ON	Uses digital zoom.	STILL
	OFF	Does not use digital zoom.	
SHARPNESS	+2 to –2	Adjusts the sharpness of the image. [↑] appears on the LCD screen except when set to 0.	STILL
WHITE BALANCE	IN DOOR	Sets the white balance (page 43).	MOVIE STILL
	OUT DOOR		
	HOLD		
	■ AUTO		
FLASH LEVEL	HIGH	Makes the flash level higher than normal.	STILL
	■ NORMAL	Normal setting.	
	LOW	Makes the flash level lower than normal.	
EXPOSURE	+2.0 EV to –2.0 EV	Adjusts the exposure.	MOVIE STILL

TOOL

Item	Setting	Description	MODE selector
COPY	OK	Copies an image (page 51).	PLAY
	CANCEL	Cancels copying of the image.	
RESIZE (in single mode only)	2048× 1536	Changes the recorded still image size (page 51).	PLAY
	1600× 1200		
	1280× 960		
	640× 480		
	■ CANCEL		

SETUP

Item	Setting	Description	MODE selector
DEMO	■ ON/STBY	Displayed only when you use the AC power adaptor in MOVIE or STILL mode. When ON is selected, a demonstration will start if you do not operate your camera for about 10 minutes. To stop the demonstration, turn off your camera. Select ON to make the demonstration appear again.	MOVIE STILL
	OFF		
VIDEO OUT	■ NTSC	Sets the video output signal to NTSC mode (North American countries, Japan, etc.).	MOVIE STILL PLAY
	PAL	Sets the video output signal to PAL mode (European countries, etc.).	
言語/ LANGUAGE	■ ENGLISH	Displays the menu items in English.	MOVIE STILL PLAY
	日本語/JPN	Displays the menu items in Japanese.	
CLOCK SET	—	Sets the date and time (page 13).	MOVIE STILL PLAY
BEEP	SHUTTER	Turns off the beep only. (The shutter sound is heard when you press the shutter button.)	MOVIE STILL PLAY
	■ ON	Turns on the beep/shutter sound (when you press the control button/shutter button).	
	OFF	Turns off the beep/shutter sound.	
LCD BRIGHT	▮▮▮▮▮▯▯▯▯▯	Adjusts the LCD screen brightness using the +/– buttons on the LCD screen. This has no effect on the recorded images.	MOVIE STILL PLAY

INDEX*

Displays six images at a time (PLAY (INDEX) mode) (page 45).

DELETE

Setting	Description	MODE selector
OK	Deletes the displayed image.	PLAY
CANCEL	Cancels deleting of the image.	

⮌ (RETURN)**

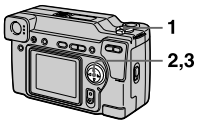
Returns to PLAY (single) mode.

* Displayed only in PLAY (single) mode.

** Displayed only in PLAY (INDEX) mode.

▶ *Various recording*

Setting the image size (IMAGE SIZE)



1 Set the MODE selector to MOVIE or STILL.

2 Select [FILE] and then [IMAGE SIZE] from the menu.

3 Select the desired image size.

Still image sizes
2048× 1536, 2048 (3:2), 1600× 1200, 1280× 960, 640× 480

Moving image sizes
320 (HQ*), 320× 240, 160× 112

* High Quality mode

The number of images or the time that you can record on a “Memory Stick” (8 MB):

Image size	Number of images or time*
2048× 1536	Approx. 5
2048 (3:2)	Approx. 5
1600× 1200	Approx. 8
1280× 960	Approx. 12
640× 480	Approx. 118
320 (HQ)	Approx. 20 (15**) sec.
320× 240	Approx. 85 (15**) sec.
160× 112	Approx. 345 (60**) sec.

* When [REC MODE] is set to [NORMAL].

** Numbers in parentheses indicate the maximum recording time during continuous recording.

When [2048 (3:2)] is selected

The image is recorded in 3:2 size to match the printing paper size ratio of 3:2.

Recording still images for e-mail (E-MAIL)

E-MAIL mode records a small-size (320×240) image at the same time as a still image. Small-size images are convenient for e-mail transmission, etc.

1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [E-MAIL] from the menu.

3 Record the image.

The number of images that you can record on a "Memory Stick" (8 MB) in E-MAIL mode.

Image size	Number of images
2048× 1536	Approx. 4
2048 (3:2)	Approx. 4
1600× 1200	Approx. 8
1280× 960	Approx. 12
640× 480	Approx. 95

To return to normal recording mode
Select [NORMAL] in step **2**.

Adding audio files to still images (VOICE)

1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [VOICE] from the menu.

3 Record the image.

If you press and release the shutter button, sound is recorded for 5 seconds.

If you hold down the shutter button, sound is recorded until you release the shutter button for up to 40 seconds.

The number of images that you can record on a "Memory Stick" (8 MB) in VOICE mode (when recording sound for five seconds):

Image size	Number of images
2048× 1536	Approx. 4
2048 (3:2)	Approx. 4
1600× 1200	Approx. 7
1280× 960	Approx. 11
640× 480	Approx. 56

To return to normal recording mode
Select [NORMAL] in step **2**.

Recording text documents (TEXT)

Text is recorded in black and white GIF format to provide a clearer image.

1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [TEXT] from the menu.

3 Record the image.

The number of images that you can record on a "Memory Stick" (8 MB) in TEXT mode:

Image size	Number of images
2048× 1536	Approx. 15 to 125
2048 (3:2)	Approx. 17 to 137
1600× 1200	Approx. 25 to 137
1280× 960	Approx. 40 to 228
640× 480	Approx. 160 to 727

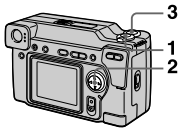
To return to normal recording mode
Select [NORMAL] in step **2**.

Notes

- If the subject is not evenly illuminated, you may be unable to record a clear image.
- Writing and reading data takes more time than in normal recording.

Recording uncompressed images (TIFF)

This mode simultaneously records still images in both TIFF format (uncompressed) and JPEG format (compressed).



1 Set the MODE selector to STILL.

2 Select [FILE], [REC MODE], and then [TIFF] from the menu.

3 Record the image.

The number of images that you can record on a "Memory Stick" (16 MB) in TIFF mode:

Image size	Number of images
2048× 1536	Approx. 1
2048 (3:2)	Approx. 1

To return to normal recording mode
Select [NORMAL] in step **2**.

Notes

- JPEG images are recorded in the image size selected by the [IMAGE SIZE] menu. TIFF images are recorded in [2048×1536] size other than when [2048 (3:2)] is selected.
- Writing data takes more time than in normal recording.
- The supplied "Memory Stick" (8 MB) does not have sufficient capacity to record uncompressed images.

Recording images in macro

1 Set the MODE selector to MOVIE or STILL.

2 Press FOCUS repeatedly until the (auto macro) indicator appears on the LCD screen.
You can record a subject as close as about 1 5/8 inches (4 cm) from the lens surface with the zoom set all the way to the W side, or about 8 inches (20 cm) with the zoom set all the way to the T side.

To return to normal recording mode
Press FOCUS repeatedly until disappears from the LCD screen.

Notes

- You cannot record images in macro with the following PROGRAM AE modes.
  — Landscape mode
  — Panfocus mode
- When recording images in macro, use the LCD screen. If you record using the finder, the range visible in the finder may differ from the actual recording range.
- You cannot record images in macro when appears on the LCD screen.

Setting the distance to the subject

Normally the focus is automatically adjusted. This function is useful when the auto focus does not work well such as in dark places.

1 Set the MODE selector to MOVIE or STILL.

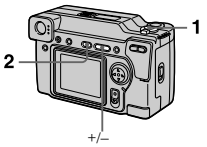
2 Press FOCUS repeatedly to achieve a sharp focus.
The (manual focus) indicator appears on the LCD screen.
You can select from the following 7 focus settings: auto (no indicator), (auto macro), 1 3/4 feet (0.5m), 3 1/4 feet (1.0m), 9 3/4 feet (3.0m), 23 feet (7.0m), ∞ (infinite)

To reactivate auto focusing
Press FOCUS repeatedly until the indicator disappears in step **2**.

Notes

- These setting distances are approximate, and should be used as a reference.
- The focus mode indicator is not displayed correctly when using a conversion lens.

Using the PROGRAM AE function



1 Set the MODE selector to MOVIE or STILL.

2 Press PROGRAM AE repeatedly to select the desired PROGRAM AE mode.

A Aperture priority mode
Makes the subject stand out against an unclear background or makes both the subject and the background stand out clearly.
Press +/– repeatedly to select an aperture value in 9 steps from F2.0 to F8.0.

S Shutter speed priority mode
Records a sharp picture of a fast-moving subject or the flow of motion of a moving subject.
Press +/– repeatedly to select a shutter speed in 19 steps from 8" to 1/1000 when recording a still image and in 13 steps from 1/8 to 1/1000 when recording a moving image.

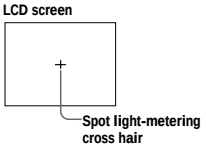
Twilight mode
Suppresses the washed-out color of a bright subject in a dark place so that you can record the subject without losing the dark atmosphere of the surroundings.

+Twilight plus mode
Increases the effectiveness of the twilight mode function.

Landscape mode
Focuses only on a distant subject to record landscapes, etc.

Panfocus mode
Changes the focus quickly and simply from a close subject to a distant subject.

Spot light-metering mode
Select this mode when there is backlight or when there is strong contrast between the subject and the background, etc. Position the point you want to record on the spot light-metering cross hair.

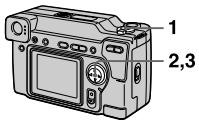


To cancel PROGRAM AE
Press PROGRAM AE repeatedly until the indicator on the LCD screen goes out.

Notes

- When you set the zoom to the T side, the value in aperture indicator may differ from the actual aperture.
- You can focus only on distant subjects in Landscape mode.
- In Panfocus mode, the zoom position and focus are fixed.
- When you record in the Twilight plus mode, we recommend that you use a tripod to prevent shaking.
- Set the forced flash when you use the flash in the following modes:
  —Twilight mode
  —Twilight plus mode
  —Landscape mode
- You cannot use the PROGRAM AE function when [REC MODE] is set to [TEXT].
- If the setting is not appropriate in aperture priority mode and shutter priority mode, the setting value indicator on the LCD screen flashes when you press the shutter button. In this case, reset the value.

Adjusting the exposure (EXPOSURE)



1 Set the MODE selector to MOVIE or STILL.

2 Select [CAMERA] and then [EXPOSURE] from the menu.

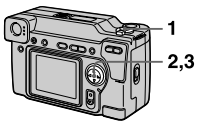
3 Select the desired exposure value.
Adjust the exposure value while checking the brightness of the background. You can select values ranging from +2.0 EV to –2.0 EV in steps of 1/3 EV.

Note

The exposure may not be adjusted properly when the subject is extremely bright or dark, or when using the flash.

Adjusting the white balance (WHITE BALANCE)

Normally the white balance is automatically adjusted.



1 Set the MODE selector to MOVIE or STILL.

2 Select [CAMERA] and then [WHITE BALANCE] from the menu.

3 Select the desired white balance setting.

IN DOOR ( )
- Places where the lighting condition changes quickly
- Under bright lighting such as photography studios
- Under sodium or mercury lamps

OUT DOOR ( )
Recording a sunrise/sunset, night scene, neon signs, or fireworks

HOLD
Recording a single-colored subject or background

AUTO (No indicator)
Adjusts the white balance automatically

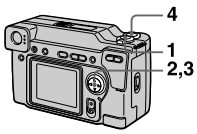
To reactivate auto adjustment

Select [AUTO] in step **3**.

Note

Select [AUTO] when recording under fluorescent lighting.

Recording the date and time on the still image (DATE/TIME)



1 Set the MODE selector to STILL.

2 Select [EFFECT] and then [DATE/TIME] from the menu.

3 Select the date and time setting.

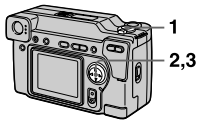
DAY&TIME
The date, hour and minutes are imposed onto the image.

DATE
The year, month and day are imposed onto the image.

OFF
The date and time are not imposed onto the image.

4 Record the image.
The date and time are not displayed during recording.
The date and time are displayed when playing back images.

Enjoying picture effects (P.EFFECT)



1 Set the MODE selector to MOVIE or STILL.

2 Select [EFFECT] and then [P.EFFECT] from the menu.

3 Select the desired mode.

SOLARIZE
The light contrast is clearer and the picture looks like an illustration.

B&W
The picture is monochrome (black and white).

SEPIA
The picture is colored like an old picture.

NEG.ART
The color and brightness of the picture are reversed.

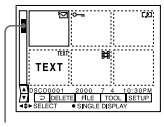
To cancel picture effect

Select [OFF] in step **3**.

Playing back six images at once (INDEX)

1 Set the MODE selector to PLAY.

2 Select [INDEX] on the LCD screen.
Six images are displayed at once (index screen).



This shows the position of the currently displayed images relative to all the recorded images.

The following marks are displayed on each image according to the image type and settings.
: Moving image file
: Voice memo file
: E-mail file
: Print mark
: Protect mark
TEXT: Text mark
TIFF: TIFF mark
(No mark): Normal recording (no settings)

To display the next (previous) index screen

Select ▲/▼ at the lower left of the LCD screen.

Displays the previous index screen

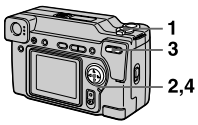
Displays the next index screen

To return to normal playback (single image)
- Select the desired image with the control button.
- Select [⮌] (RETURN).

Note

You cannot display images recorded in TEXT mode on the INDEX screen.

Enlarging a part of the still image (Zoom and trimming)



1 Set the MODE selector to PLAY.

2 Display the image to be enlarged.

3 Zoom in/out the image with the zoom button.
The zoom scaling indicator appears on the LCD screen.

4 Press the control button repeatedly to select the desired part of the image.
▲: The image moves downward
▼: The image moves upward
◀: The image moves rightward
▶: The image moves leftward

To return to the normal size

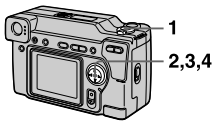
Zoom in with the zoom button until the zoom scaling indicator (×1.1) disappears from the screen, or simply press ●.

To record an enlarged image (trimming)

①Enlarge the image.
②Press the shutter button. The image is recorded at 640× 480 size, then the display returns to the image display before enlargement.

Notes
- You cannot trim images recorded in TEXT mode or uncompressed images.
- The maximum zoom magnification is 5× the original image, regardless of the image size.
- The picture quality of trimmed images may deteriorate.
- The original picture remains even after trimming.
- The trimmed image is recorded as the newest file.

Rotating a still image (ROTATE)



1 Set the MODE selector to PLAY.

2 Display the image to rotate.

3 Select [FILE] and then [ROTATE] from the menu.

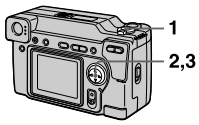
4 Rotate the image clockwise ↘ or counterclockwise ↙, then select [RETURN].

Notes

- You may not be able to rotate protected images or images recorded with other equipment.
- Also, when viewing images on a personal computer, the image rotation information may not be reflected depending on the application software.
- You cannot rotate protected or uncompressed images, or images recorded in TEXT mode.

Playing back the images in order (SLIDE SHOW)

This function is useful for checking the recorded images or for presentations, etc.



1 Set the MODE selector to PLAY.

2 Select [FILE] and then [SLIDE SHOW] from the menu.
Set the following items.

INTERVAL
1 MIN (one minute), 30 SEC (30 seconds), 10 SEC (10 seconds), 5 SEC (5 seconds), 3 SEC (3 seconds)

REPEAT
ON: Plays back images in a continuous loop until [RETURN] is selected.
OFF: After all images have been played back, the slide show ends.

3 Select [START] with the control button.
The slide show begins.

To cancel the slide show
Select [CANCEL] in step **2** or **3**.

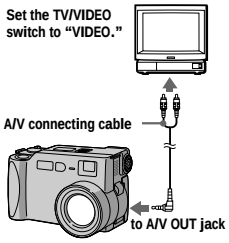
To skip to the next/previous image during slide show playback
Select I◄/►I at the lower left of the LCD screen.

Note

The [INTERVAL] setting time is approximate, and may vary depending on the played back image size or other factors.

Viewing images on a TV screen

Before connecting your camera, be sure to turn off the TV.



1 Connect the A/V connecting cable to the A/V OUT jack of your camera and to the audio/video input jacks of the TV.
If your TV has stereo type audio input jacks, connect the audio plug of the A/V connecting cable to the Lch jack.

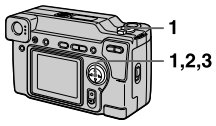
2 Turn on the TV, then start playback on your camera.
The playback image appears on the TV screen.

Note

You cannot use a TV that has an antenna (aerial) connector only.

Preventing accidental erasure (PROTECT)

The ⊶ (protect) indicator appears on protected images.



In single mode

1 Set the MODE selector to PLAY, then display the image to protect.

2 Select [FILE], [PROTECT], and then [ON] from the menu.
The displayed image is protected and ⊶ appears.

To release protection
Select [OFF] in step **2**.

In INDEX mode

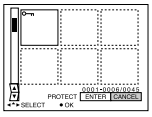
1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [FILE], [PROTECT], and then [ALL] or [SELECT] from the menu.

3 When you select [ALL]
Select [ON].
All the images recorded in "Memory Stick" are protected.

When you select [SELECT]
Select all the images to protect with the control button, then select [ENTER].

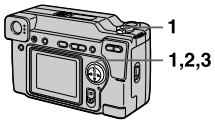
The selected images are protected.



To release protection
If you selected [ALL] in step **2**, select [OFF]. If you selected [SELECT] in step **2**, select the images to unprotect with the control button, then select [ENTER].

Deleting images (DELETE)

You cannot delete protected files.



In single mode

1 Set the MODE selector to PLAY, then display the image to delete.

2 Select [DELETE] and then [OK] from the menu.
The image is deleted.

In INDEX mode

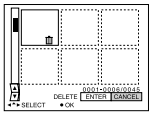
1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [DELETE] and then [ALL] or [SELECT] from the menu.

3 When you select [ALL]
Select [ENTER].
All unprotected images are deleted.

When you select [SELECT]
Select all the images to delete with the control button, then select [ENTER].

The 🗑 (delete) indicator appears on the selected images and these images are deleted.

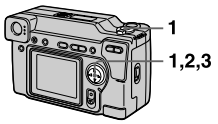


To cancel deleting
Select [CANCEL] in step **2** or **3**.

Note

If there are files on the "Memory Stick" with names having the same last 4 digits as the file name of the image to be deleted, these files are also deleted at the same time.

Changing the recorded still image size (RESIZE)



1 Set the MODE selector to PLAY and display the image to resize.

2 Select [TOOL] and then [RESIZE] from the menu.

3 Select the desired image size.
2048× 1536, 1600× 1200, 1280× 960, 640× 480
The changed image is recorded, then the display returns to the image display before resizing.

To return to the original size
Select [CANCEL] in step **3**.

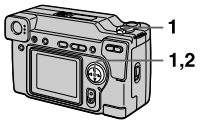
Notes

- You cannot change the size of images recorded in TEXT mode or uncompressed images.
- When you change from a small size to a large size, the picture quality deteriorates.
- The original image is retained even after resizing.
- The resized image is recorded as the newest file.

Copying images (COPY)

You can copy images to another "Memory Stick."

In single mode



1 Set the MODE selector to PLAY, then display the image to copy.

2 Select [TOOL], [COPY], and then [OK] from the menu.
"FILE ACCESS" appears.

3 When "CHANGE MEMORY STICK" appears, eject the "Memory Stick."
"INSERT MEMORY STICK" appears.

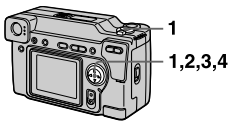
4 Insert the "Memory Stick" on which to copy the image.
"RECORDING" appears. When copying is completed, "COMPLETE" appears.
To end copying, select [EXIT].

To copy the image to another "Memory Stick"
Select [CONTINUE] after step **4** and insert a new "Memory Stick."

Notes

If you do not select [EXIT] after "COMPLETE" appears and instead insert a new "Memory Stick," the same image is copied again.

In INDEX mode



1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [TOOL], [COPY], and then [SELECT] from the menu.

3 Select the image to copy.
The ✓ (select) indicator appears on the image.

4 Select [ENTER].
"MEMORY STICK ACCESS" appears.

5 When "CHANGE MEMORY STICK" is displayed, eject the "Memory Stick."
"INSERT MEMORY STICK" appears.

6 Insert another "Memory Stick."
"RECORDING" appears. When copying is completed, "COMPLETE" appears.
To end copying, select [EXIT].

To copy the image to another "Memory Stick"
Select [CONTINUE] after step **6** and insert a new "Memory Stick."

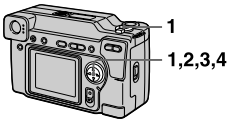
To cancel copying part-way
Change the MODE selector setting or turn off the power.

Notes

- If you do not select [EXIT] after "COMPLETE" appears and instead insert a new "Memory Stick," the same image is copied again.
- You cannot copy uncompressed images.
- You cannot copy images that are bigger than 5 MB at once. If "NOT ENOUGH MEMORY" appears or ✓ flashes on the INDEX screen, cancel some images to copy and try again.

Selecting still images to print (PRINT MARK)

You can mark a print mark on still images recorded with your camera. This mark is convenient when you have images printed at a shop that conforms with the DPOF (Digital Print Order Format) standard.



In single mode

1 Set the MODE selector to PLAY and display the image you want to print.

2 Select [FILE], [PRINT MARK], and then [ON] from the menu.
The (print) mark is displayed on the image.

To unmark the print mark
Select [OFF] in step **2**.

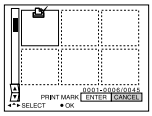
In INDEX mode

1 Set the MODE selector to PLAY, then display the INDEX screen.

2 Select [FILE], [PRINT MARK], and then [SELECT] from the menu.

3 Select the images to mark with the control button.

4 Select [ENTER].
of the selected images change from green to white.



To unmark selected print marks
Select the images to unmark in step **3** with the control button, then select [ENTER].

To unmark all the print marks
Select [FILE], [PRINT MARK], [ALL] and then [OFF] from the menu.
of all images are unmarked.

Notes

- You cannot mark moving images or images recorded in TEXT mode.
- If you mark an image recorded in TIFF mode with a print mark, only the uncompressed image is printed, and the JPEG image recorded at the same time is not printed.

Precautions

On cleaning

Cleaning the LCD screen
Wipe the screen surface with a cleaning cloth (not supplied) or a LCD cleaning kit (not supplied) to remove fingerprints, dust, etc.

Cleaning the camera surface
Clean the camera surface with a soft cloth slightly moistened with water, then wipe the surface dry. Do not use any type of solvent such as thinner, alcohol or benzene as this may damage the finish or the casing.

After using your camera at the seashore or other dusty locations
Clean your camera carefully. Otherwise, the salty air may corrode the metal fittings or dust may enter the inside of your camera, causing a malfunction.

Note on operating temperature

Your camera is designed for use between the temperatures of 32˚F and 104˚F (0˚C and 40˚C). Recording in extremely cold or hot places that exceed this range is not recommended.

On moisture condensation

If the camera is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside or outside the camera. Should this occur, the camera will not operate properly.

Moisture condensation occurs easily when:

- The camera is brought from a cold location such as a ski slope into a warmly heated room.
- The camera is taken from an air-conditioned room or car interior to the hot outdoors, etc.

How to prevent moisture condensation
When bringing the camera from a cold place to a warm place, seal the camera in a plastic bag and allow it to adapt to conditions at the new location over a period of time (about an hour).

If moisture condensation occurs
Turn off the camera and wait about an hour for the moisture to evaporate. Note that if you attempt to record with moisture remaining inside the lens, you will be unable to record clear images.

On AC power adaptor

- Unplug the unit from the wall outlet (mains) when you are not using the unit for a long time.
- To disconnect the power cord (mains lead), pull it out by the plug. Never pull the power cord (mains lead) itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord (mains lead) forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM reception and video operation are disturbed.
- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  — Extremely hot or cold
  — Dusty or dirty
  — Very humid
  — Vibrating

On battery pack

- Use only the specified charger with the charging function.
- To prevent accident from a short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 140˚F (60˚C), such as in a car parked in the sun or under direct sunlight.
- Keep the battery pack dry.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Install the battery pack to the camera securely.
- Charging while some capacity remains does not affect the original battery capacity.

If any problem occurs, unplug your camera and contact your nearest Sony dealer.

On internal rechargeable button battery

This camera has an internal rechargeable button battery for maintaining the date and time and other settings regardless of whether the power is on or off. This rechargeable button battery is constantly charged as long as you are using the camera. However, if you use the camera for only short periods it discharges gradually, and if you do not use the camera at all for about half a year it becomes completely discharged. In this case, be sure to charge this rechargeable button battery before using the camera.
However, even if this rechargeable button battery is not charged, you can still use the camera as long as you do not record the date and time.

Charging method
Connect the camera to a wall outlet (mains) with the AC power adaptor, or install a charged battery pack, and leave the camera for 24 hours or more with the POWER switch set to OFF.

On “Memory Sticks”

“Memory Stick” is a new compact, portable and versatile IC recording medium with a data capacity that exceeds a floppy disk. “Memory Stick” is specially designed for exchanging and sharing digital data among “Memory Stick” compatible products. Because it is removable, “Memory Stick” can also be used for external data storage.

There are two types of “Memory Sticks”: general “Memory Sticks” and “MagicGate Memory Sticks” that are equipped with the MagicGate* copyright protection technology.
You can use both types of “Memory Stick” with your camera. However, because your camera does not support the MagicGate standards, data recorded with your camera is not subject to MagicGate copyright protection.

* MagicGate is copyright protection technology that uses encryption technology.

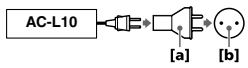
Notes

- Do not remove the “Memory Stick” while reading or writing data.
- Data may be damaged if:
  — you remove the “Memory Stick” or turn off your camera while reading or writing data.
  — you use the “Memory Stick” in a location subject to the effects of static electricity or noise.
- Do not attach any other material than the supplied label on the labeling position.
- Attach the label so that it does not stick out from the proper attachment location.
- When you carry or store the “Memory Stick,” put it in its supplied case.
- Do not touch the terminals of a “Memory Stick” with your hand or a metal object.
- Do not strike, bend or drop the “Memory Stick.”
- Do not disassemble or modify the “Memory Stick.”
- Do not allow the “Memory Stick” to get wet.

“Memory Stick”, MEMORY STICK, “MagicGate Memory Stick” and MG are trademarks of Sony Corporation.
“MagicGate” and MAGICGATE are trademarks of Sony Corporation.

Using your camera abroad

Power sources
You can use your camera in any country or area with the supplied battery charger within 100 V to 240 V AC, 50/60 Hz. Use the supplied AC power adaptor **[a]**, if necessary, depending on the design of the wall outlet (mains) **[b]**.



Watching the playback picture on TV
If you want to view the playback picture on a TV, you need a TV having a video input jack and a video connecting cable.
The color system of the TV must be the same as that of your digital still camera. TV color systems differ from country to country. Check the following list:

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Columbia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, Czech Republic, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Troubleshooting

If you experience trouble with your camera, first check the following items. Should your camera still not operate properly after you have made these checks, consult your Sony dealer or local authorized Sony service facility. If code displays (C:□□:□□) appear on the LCD screen, the self-diagnosis display function is working (page 62).

Symptom	Cause and/or Solution
Your camera does not work.	• You are not using an “InfoLITHIUM” battery pack. → Use an “InfoLITHIUM” battery pack (page 8). • The battery level is low (the indicator appears on the LCD screen). → Charge the battery pack (page 9). • The AC power adaptor is not connected securely. → Connect it firmly to the DC IN jack of your camera and a wall outlet (mains) (page 12). • The built-in microcomputer is not working properly. → Disconnect and then reconnect all power sources after one minute. Then turn the power on by sliding the POWER switch down and check that the camera works properly.
Your camera cannot record images.	• The MODE selector is set to PLAY. → Set it to MOVIE or STILL (pages 16, 21). • No “Memory Stick” has been inserted into your camera. → Insert a “Memory Stick” (page 15). • The write-protect tab on the “Memory Stick” is set to LOCK. → Set it to the recording position.
The picture is out of focus.	• Your camera is not in macro recording mode when you shoot a subject that is about 1 5/8 to 9 7/8 inches (4 to 25 cm) away from the lens. → Set the macro recording mode (page 41). → Press the zoom button to set to the W side.
The resizing function does not work.	• You cannot resize moving images and text images.
You cannot display a print mark.	• You cannot display print marks on moving images and text images.
The picture is noisy.	• Your camera is placed near a TV or other equipment that uses strong magnets. → Move your camera away from the TV, etc.

Symptom	Cause and/or Solution
The picture is too dark.	• You are shooting a subject with a light source behind the subject. → Adjust the exposure (page 43). → Adjust the brightness of the LCD screen (page 36).
The flash does not work.	• The flash is set to . → Set the flash to auto (no indicator), or (page 20). • PROGRAM AE is set to the Twilight, Twilight plus, or Panfocus mode. → Cancel the mode (page 42) or set the flash to . • The MODE selector is set to MOVIE. → Set it to STILL.
The date and time are recorded incorrectly.	• The date and time are not set correctly. → Set the correct date and time (page 13).
Vertical streaks appear when you are shooting a very bright subject.	• The smear phenomenon is happening. → This is not a malfunction.
The battery life is short.	• You are recording/playing back images under extremely cold temperatures. • The battery pack is not charged enough. → Charge the battery pack fully. • The battery pack is dead. → Replace the battery pack with a new one (page 8).
The battery remaining indicator is incorrect.	• You have used the camera for a long time in an extremely hot or an extremely cold location. • The battery pack is dead. → Replace the battery pack with a new one (page 8). • The battery pack is discharged. → Install a charged battery pack (pages 8, 9).
Sufficient battery remaining indicator is displayed but the power runs out soon.	→ Fully charge the battery pack (page 9).

Symptom	Cause and/or Solution
Nothing appears in the display window or the indicators flash during charging.	• The AC power adaptor is disconnected. →Firmly connect the power cord to the wall outlet (page 12). • The battery pack has malfunctioned. →Contact your Sony dealer or local authorized Sony service facility. • The battery pack is not installed correctly. →Install the battery pack correctly (page 8).
The zoom does not work.	• PROGRAM AE is set to the Panfocus mode. →Cancel the Panfocus mode (page 42). • [CONVERSION] in the menu setting is set to [ON]. →Set it to [OFF].
Digital zoom does not function.	• You cannot use digital zoom to record moving pictures.
Your camera cannot play back images.	• The MODE selector is set to STILL or MOVIE. →Set it to PLAY (page 22).
The image and sound are interfered by noise when you play back an image on a personal computer.	• You are playing back the file directly from the "Memory Stick." →Copy the file to the hard disk of the personal computer and then play back the file from the hard disk (page 28).
The image cannot be played back on a personal computer.	→Consult the personal computer or software manufacturer.
Your camera cannot delete an image.	• The image is protected. →Cancel the protection (page 49).
The power turns off suddenly.	• With the MODE selector set to STILL or MOVIE, if you do not operate the camera for about three minutes while the power is on, the camera turns off automatically to prevent wearing down the battery. →Turn on the camera. • The battery is discharged. →Replace it with a charged battery.
The image does not appear on the TV screen.	• The video output signal setting of your camera is incorrect. →Change the setting (page 48).
A file error occurs when you play back a file.	• The image size is larger than 2048× 1536. →Use an image size of 2048× 1536 or smaller.
The PROGRAM AE function does not work.	• The camera is set to text mode. →Cancel text mode (page 42).

Symptom	Cause and/or Solution
The LCD screen freezes momentarily.	• This is a characteristic of the system and is not a malfunction.
Your personal computer does not recognize your camera.	• The camera is turned off. →Turn on the camera. • The battery level is low. →Use the AC power adaptor (page 12). • The USB cable is not connected firmly. →Disconnect the USB cable, and connect it again firmly. Make sure that "PC MODE" is displayed on the LCD screen (page 27). • The USB connectors on your personal computer are connected to other equipment besides the keyboard, the mouse, and your camera. →Disconnect the USB cables except for the ones connected to the keyboard, the mouse, and your camera (page 25).

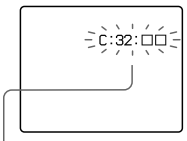
Warning and notice messages

Various messages appear on the LCD screen. Check the corresponding descriptions in the following list.

Message	Meaning
NO MEMORY STICK	No "Memory Stick" has been inserted.
SYSTEM ERROR	Turn the power off and on again.
MEMORY STICK ERROR	The inserted "Memory Stick" cannot be used with your camera, or is damaged.
FORMAT ERROR	Failed to format the "Memory Stick."
MEMORY STICK LOCKED	The write-protect tab on the "Memory Stick" is set to the LOCK position.
NO MEMORY SPACE	The capacity of the "Memory Stick" is full, and you cannot record or copy images.
NO FILE	No image has been recorded on the "Memory Stick."
FILE ERROR	An error occurred while playing back the image.
FILE PROTECT	The image is protected against erasure.
for "InfoLITHIUM" battery only	The battery is not the "InfoLITHIUM" type.
NOT ENOUGH MEMORY	The images you want to copy are too big to copy with your camera.
DIRECTORY ERROR	A directory with the same name already exists.
IMAGE SIZE OVER	You are playing back an image of a size that cannot be played back with your camera.
INVALID OPERATION	You are playing back a file that was created on equipment other than your camera.
⚠	The battery level is low or zero.
🔑	The image is protected.

Self-diagnosis display

Your camera has a self-diagnosis display. This function displays the camera condition on the LCD screen with a combination of a letter and four digits of numbers. If this occurs, check the following code chart. The code informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



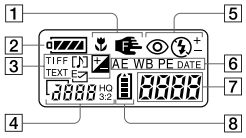
Self-diagnosis display
- C:□□:□□
  You can reverse the camera malfunction yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony service facility.

First three digits	Cause and/or Corrective Action
C:32:□□	• There is trouble with your camera's hardware or zooming function. →Turn the power off and on again.
C:13:□□	• An unformatted "Memory Stick" is inserted. →Format the "Memory Stick" (page 33). • The inserted "Memory Stick" cannot be used with your camera, or is damaged. →Insert a new "Memory Stick" (page 15).
E:61:□□ E:91:□□	• A camera malfunction that you cannot reverse has occurred. →Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit service code. (example: E:61:10)

If you are unable to solve the problem even after trying the corrective actions a few times, contact your Sony dealer or local authorized Sony service facility.

When a self-diagnosis display appears
The error display appears on the display window (page 64).

Display window indicators



1 **Macro/focus mode indicator**

2 **Battery remaining indicator**

3 **Recording/EV level indicator**

4 **Image size indicator**

5 **Flash mode/flash level indicator**

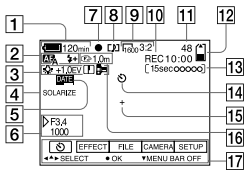
6 **PROGRAM AE indicator**
White balance indicator
Picture effect indicator
Date/time indicator

7 **Battery usable time indicator (displayed only during charging)**
Number of recorded images
Error display
Err: Some kind of misoperation has occurred. Check the self-diagnosis display on the LCD screen (page 62) and take the appropriate corrective action.
LENS: A problem has occurred with lens drive. Turn the camera on and off several times, and if the problem persists, contact your Sony dealer or authorized Sony service facility.

8 **"Memory Stick" remaining indicator**

LCD screen indicators

The indicators during recording



1 **Battery remaining indicator**

2 **PROGRAM AE/flash level/flash mode indicator**

3 **White balance/EV level/ sharpness/conversion mode indicator**

4 **Picture effect indicator**

5 **Date/time indicator**

6 **Aperture/shutter speed indicator**

7 **AE lock indicator/Focus lock indicator**

8 **Recording mode indicator**

9 **Image size indicator**

10 **Self-diagnosis function indicator/recording time indicator**

11 **Number of recorded images**

12 **Remaining memory capacity indicator**

13 **Moving image/VOICE recording time indicator**

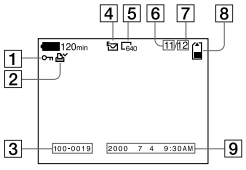
14 **Self-timer indicator**

15 **Spot light-metering indicator**

16 **Focus/macro mode indicator**

17 **Menu bar and guide menu**
They appear by pressing ▲ on the control button and disappear by pressing ▼ of it.

When playing back still images



1 **Protect indicator**

2 **Print mark indicator**

3 **File name**

4 **Recording mode indicator**

5 **Image size indicator**

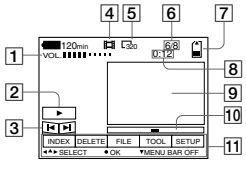
6 **Image number**

7 **Number of stored images in "Memory Stick"**

8 **Remaining memory capacity indicator**

9 **Recording date of the playback image/menu bar and guide menu**

When playing back moving images



1 **VOL. (Volume) indicator**

2 **Playback/pause buttons**
▶: during pause
❚❚: during playback

3 **Fast-forward/rewind buttons**

4 **Recording mode indicator**

5 **Image size indicator**

6 **Image number/number of stored images in "Memory Stick"**

7 **Remaining memory capacity indicator**

8 **Counter**

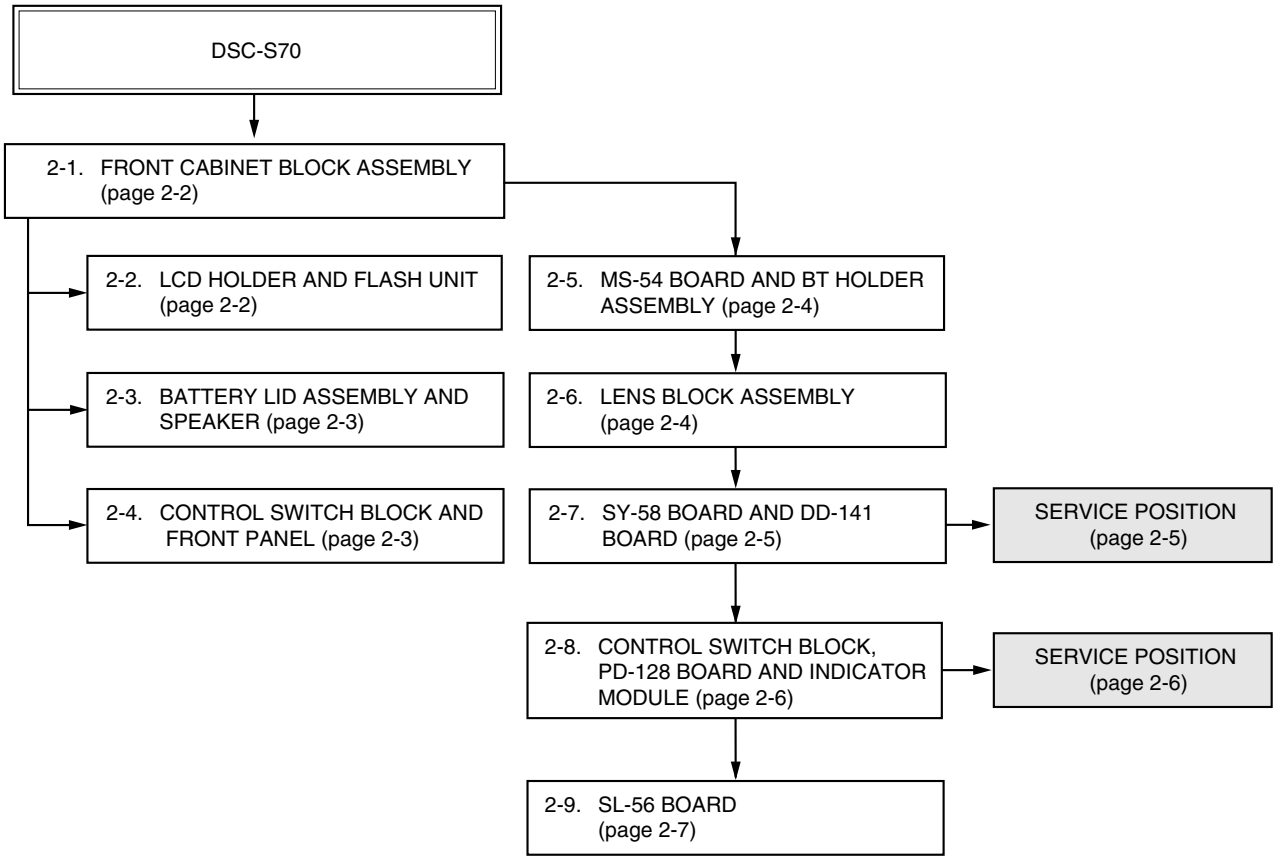
9 **Playback image**

10 **Play bar**

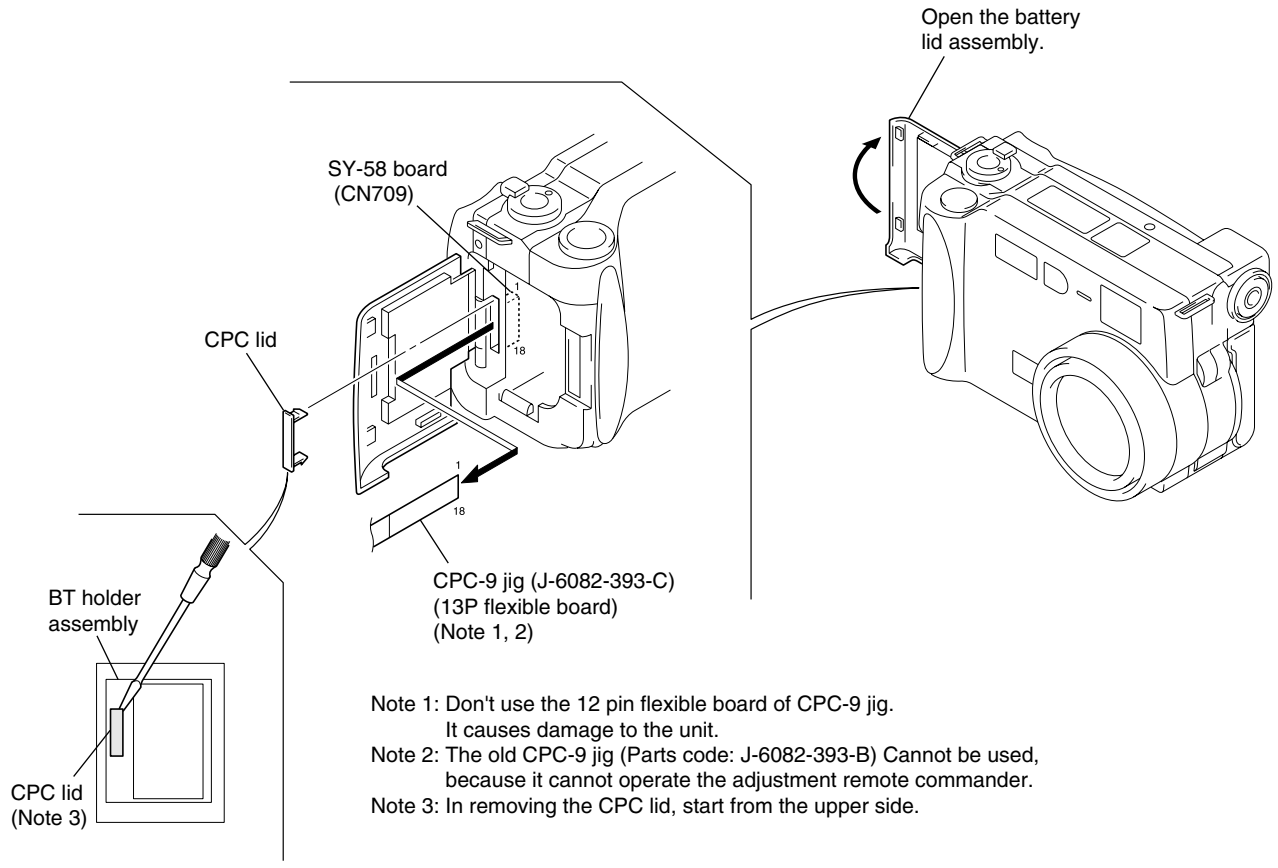
11 **Menu bar and guide menu**

SECTION 2
DISASSEMBLY

• This set can be disassembled in the order shown below.


DSC-S70
2-1. FRONT CABINET BLOCK ASSEMBLY (page 2-2)
2-2. LCD HOLDER AND FLASH UNIT (page 2-2)
2-3. BATTERY LID ASSEMBLY AND SPEAKER (page 2-3)
2-4. CONTROL SWITCH BLOCK AND FRONT PANEL (page 2-3)
2-5. MS-54 BOARD AND BT HOLDER ASSEMBLY (page 2-4)
2-6. LENS BLOCK ASSEMBLY (page 2-4)
2-7. SY-58 BOARD AND DD-141 BOARD (page 2-5)
SERVICE POSITION (page 2-5)
2-8. CONTROL SWITCH BLOCK, PD-128 BOARD AND INDICATOR MODULE (page 2-6)
SERVICE POSITION (page 2-6)
2-9. SL-56 BOARD (page 2-7)

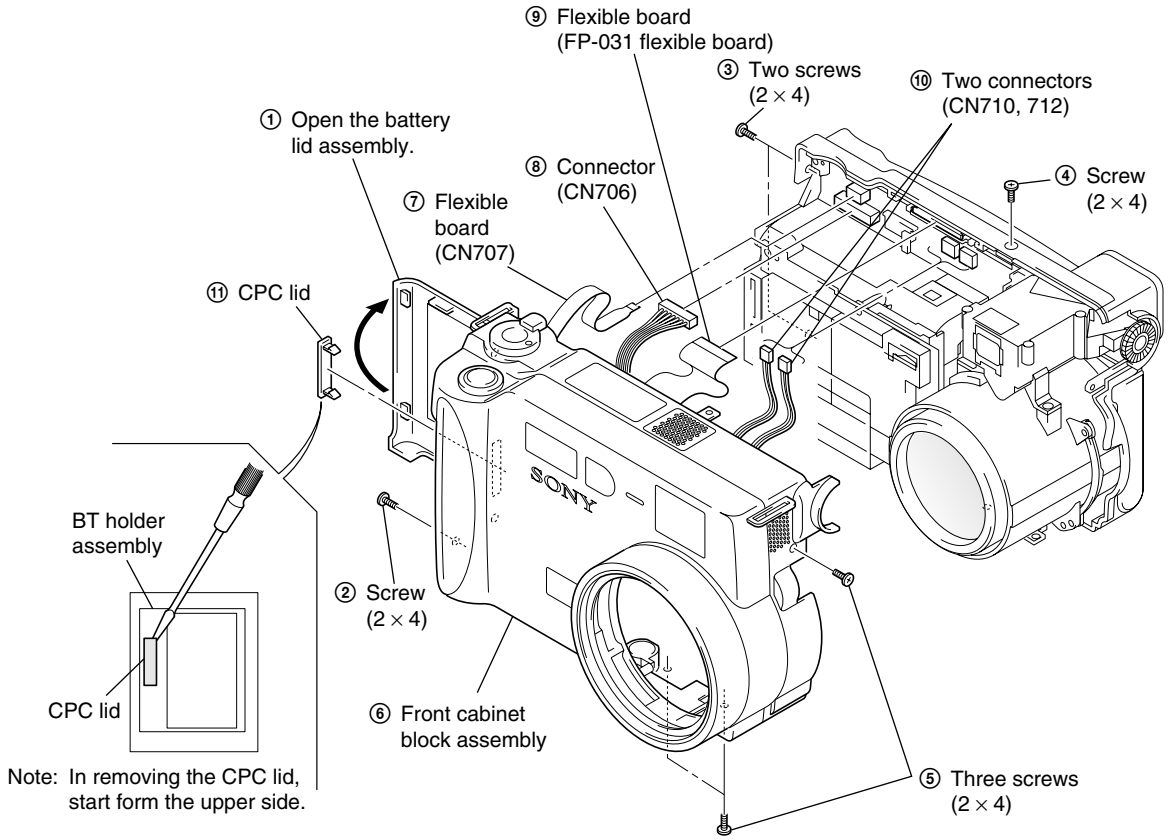
• ATTACHMENT OF CPC-9 JIG



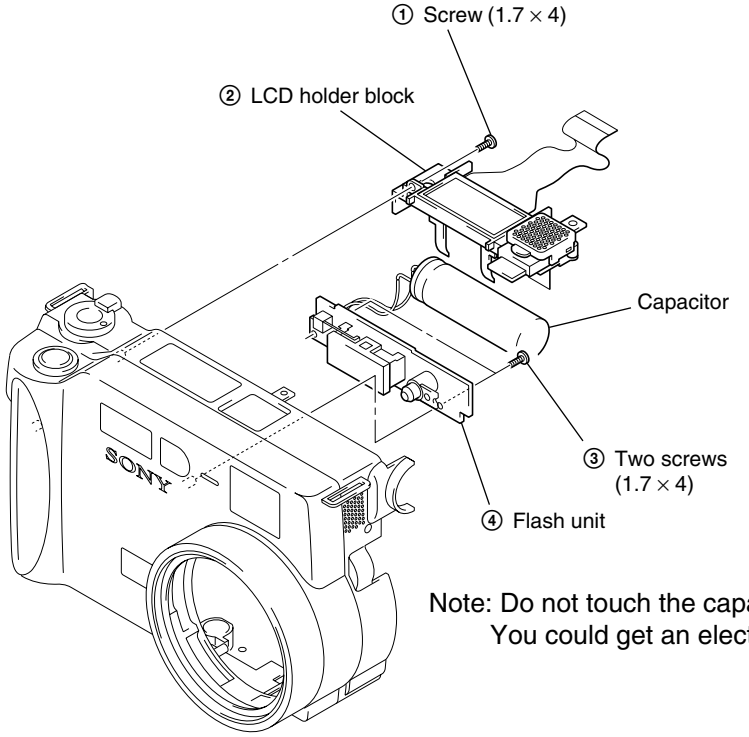
Note 1: Don't use the 12 pin flexible board of CPC-9 jig.
It causes damage to the unit.
Note 2: The old CPC-9 jig (Parts code: J-6082-393-B) Cannot be used, because it cannot operate the adjustment remote commander.
Note 3: In removing the CPC lid, start from the upper side.

Note: Follow the disassembly procedure in the numerical order given.

2-1. FRONT CABINET BLOCK ASSEMBLY

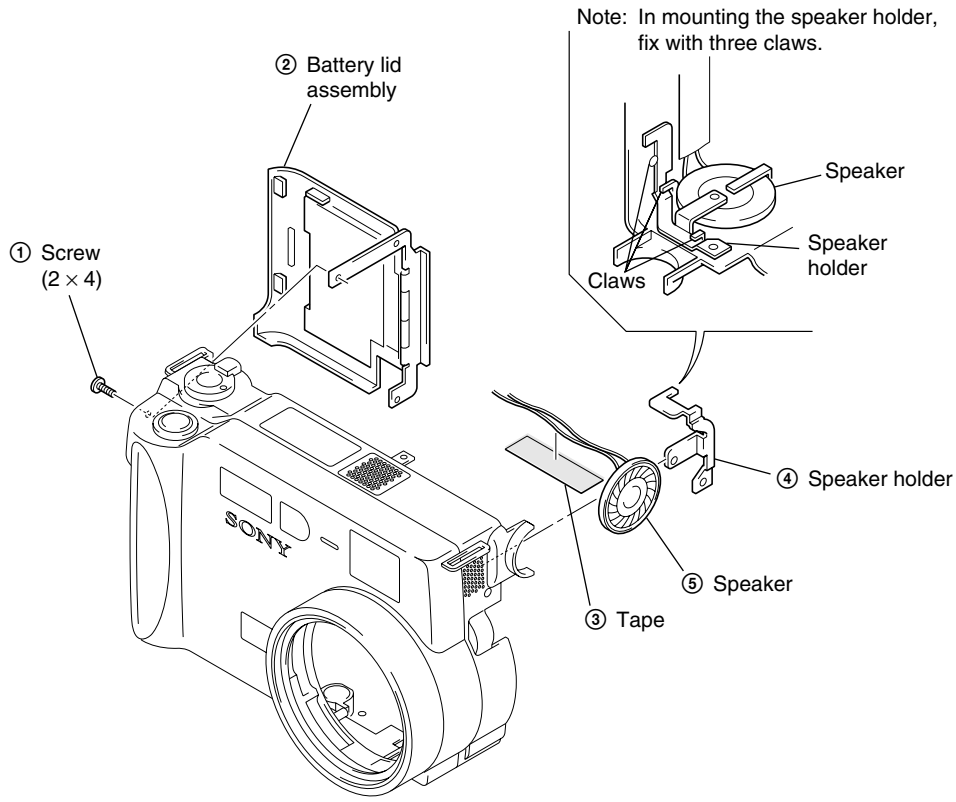

⑨ Flexible board (FP-031 flexible board)
③ Two screws (2 × 4)
⑩ Two connectors (CN710, 712)
① Open the battery lid assembly.
⑧ Connector (CN706)
④ Screw (2 × 4)
⑦ Flexible board (CN707)
⑪ CPC lid
BT holder assembly
② Screw (2 × 4)
CPC lid
⑥ Front cabinet block assembly
⑤ Three screws (2 × 4)
Note: In removing the CPC lid, start form the upper side.

2-2. LCD HOLDER AND FLASH UNIT

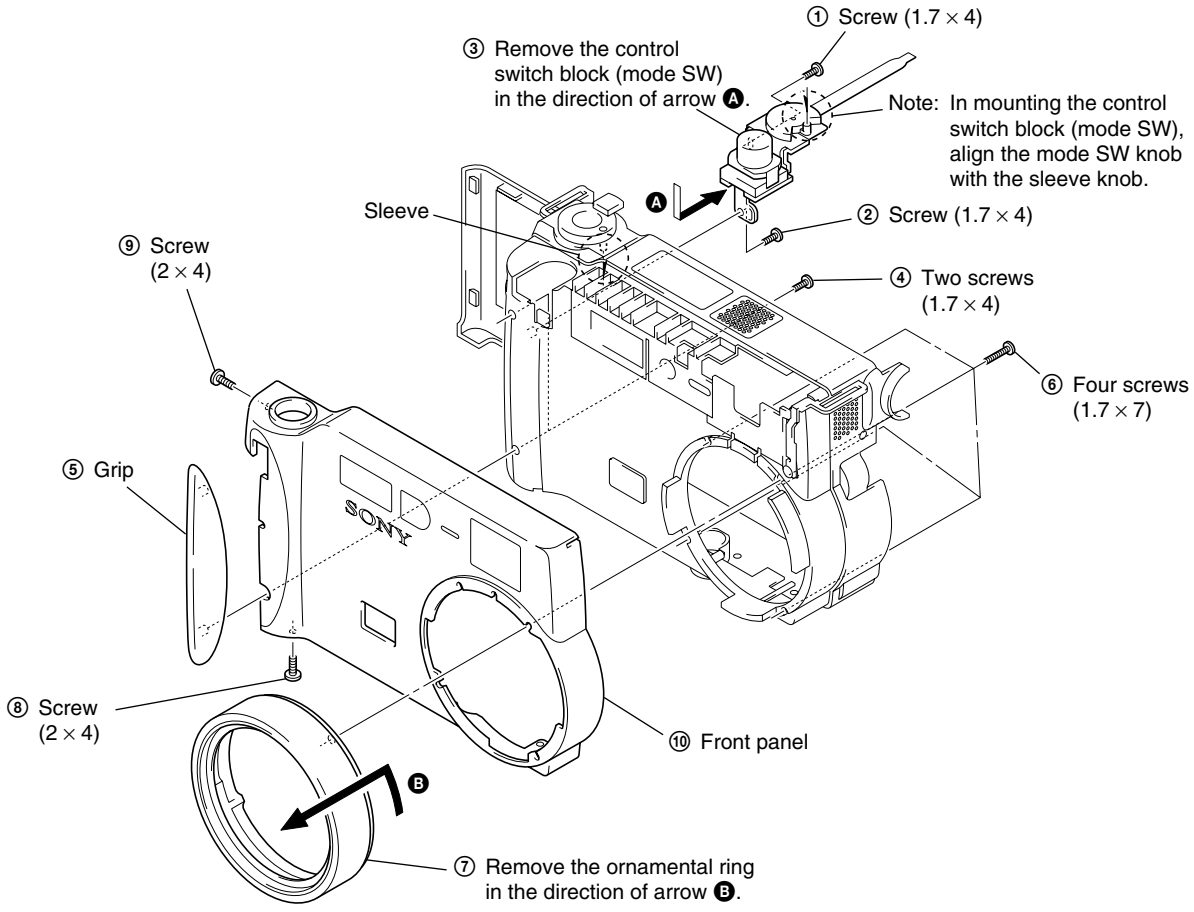


Note: Do not touch the capacitor terminals.
You could get an electric shock.

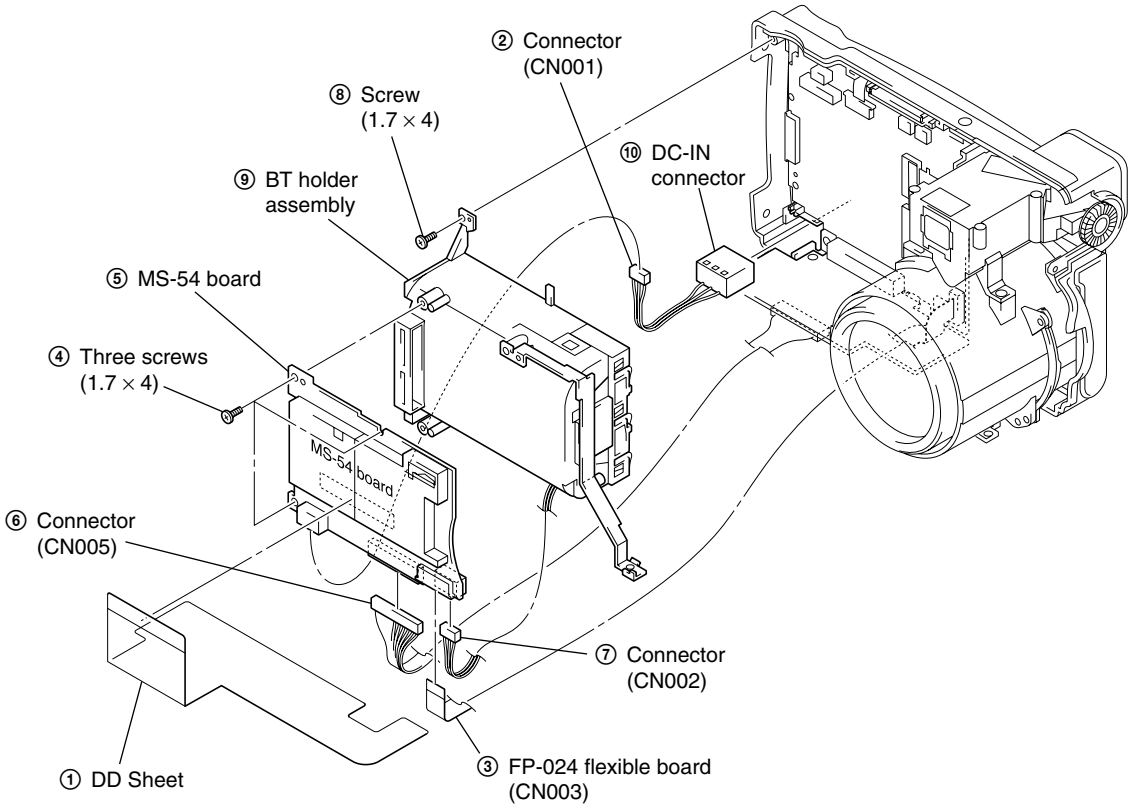
2-3. BATTERY LID ASSEMBLY AND SPEAKER



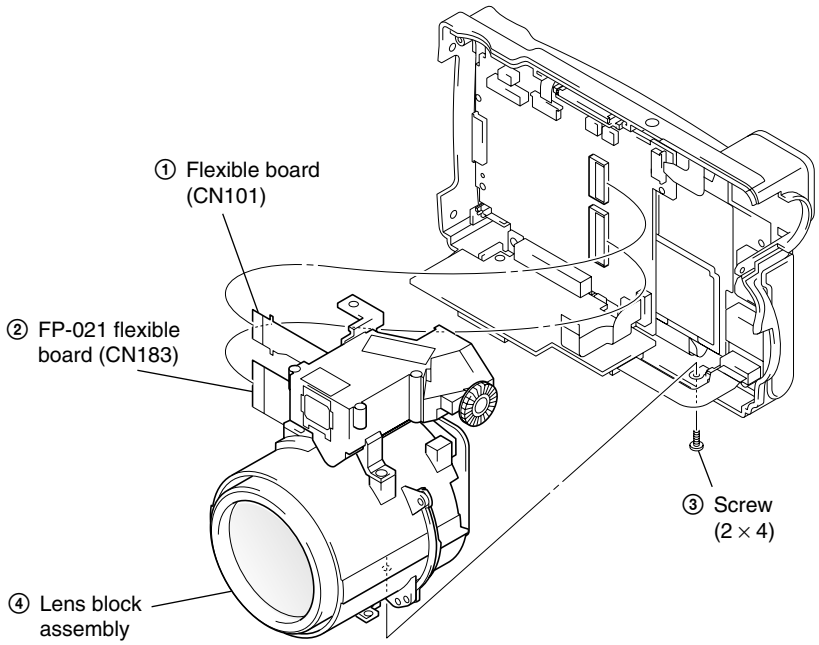
2-4. CONTROL SWITCH BLOCK AND FRONT PANEL


① Screw (1.7 × 4)
③ Remove the control switch block (mode SW) in the direction of arrow A.
Note: In mounting the control switch block (mode SW), align the mode SW knob with the sleeve knob.
Sleeve
② Screw (1.7 × 4)
⑨ Screw (2 × 4)
④ Two screws (1.7 × 4)
⑥ Four screws (1.7 × 7)
⑤ Grip
⑧ Screw (2 × 4)
⑩ Front panel
⑦ Remove the ornamental ring in the direction of arrow B.

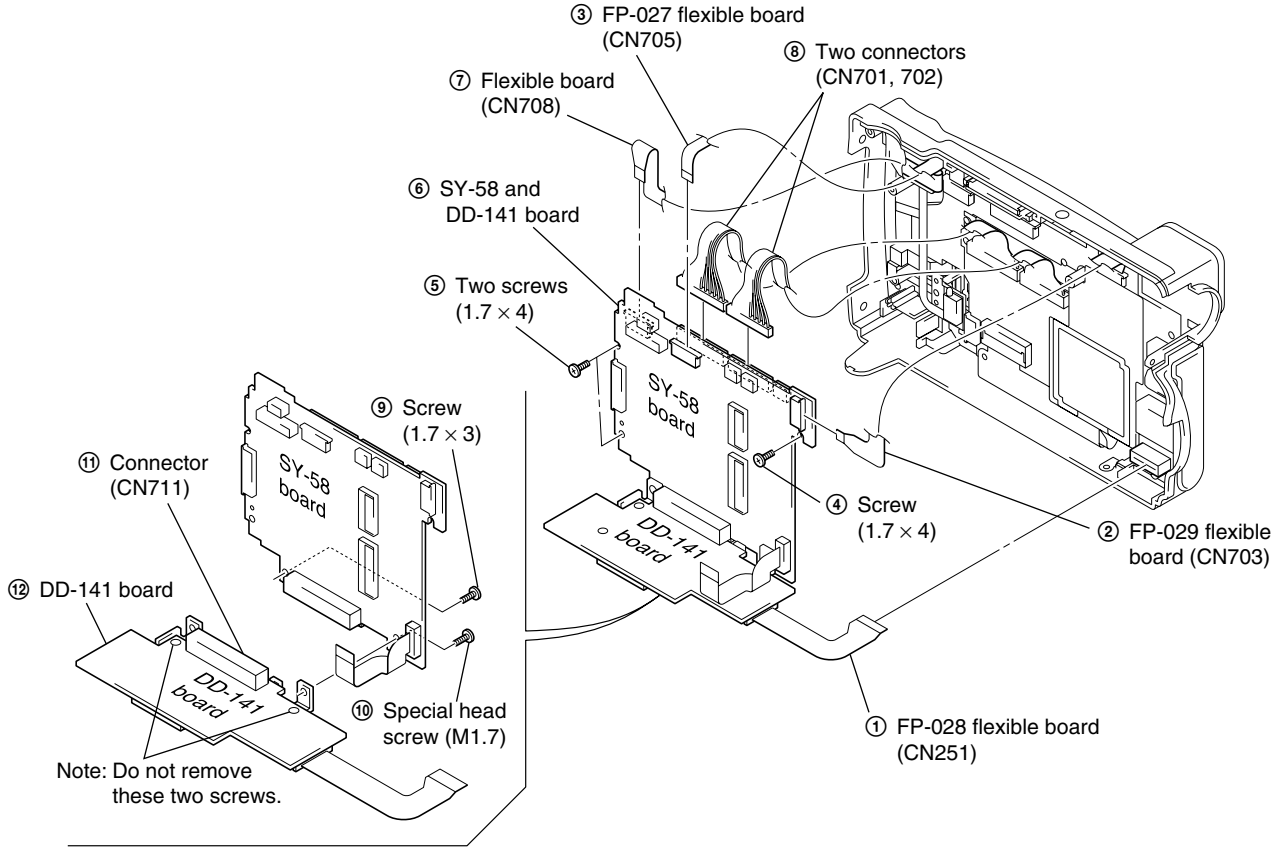
2-5. MS-54 BOARD AND BT HOLDER ASSEMBLY



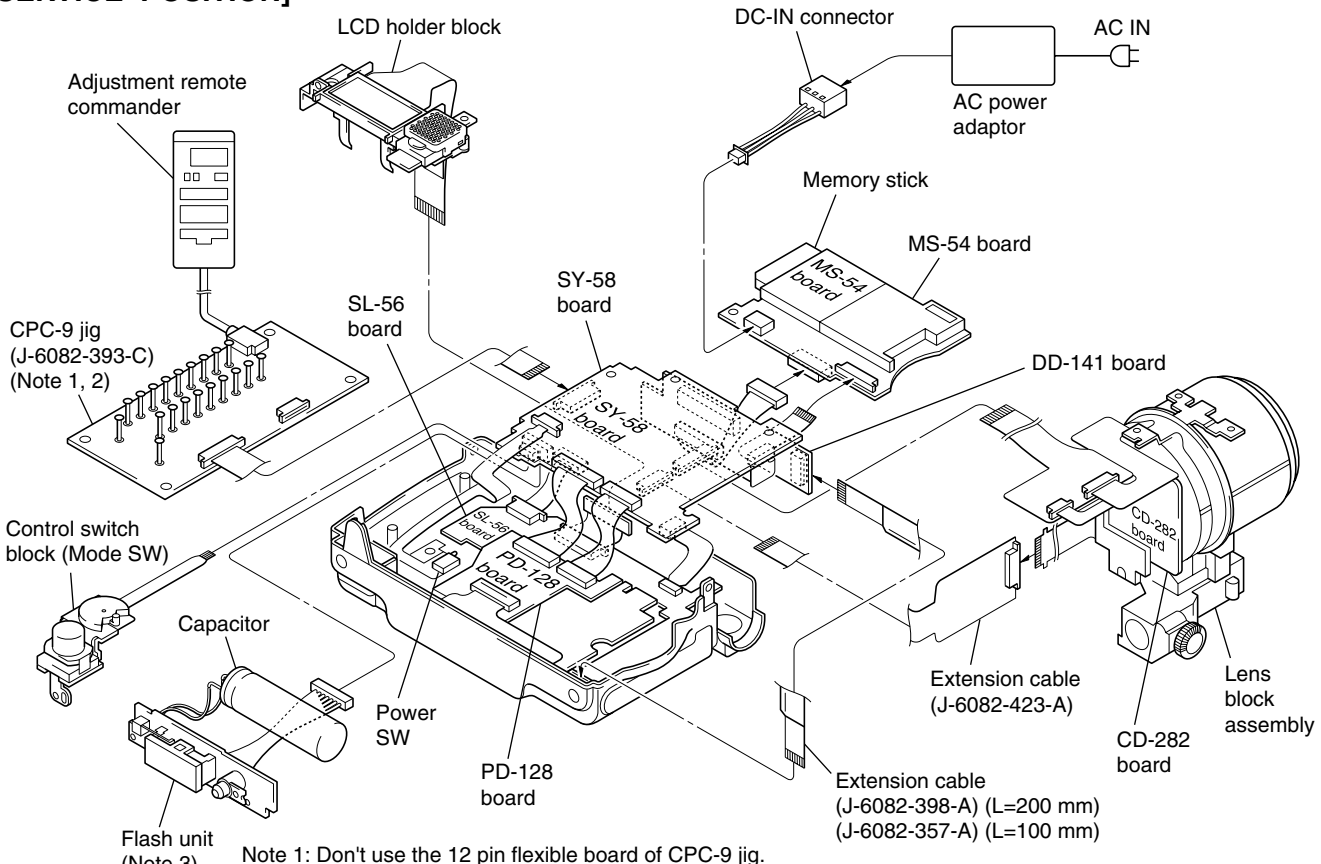
2-6. LENS BLOCK ASSEMBLY



2-7. SY-58 BOARD AND DD-141 BOARD

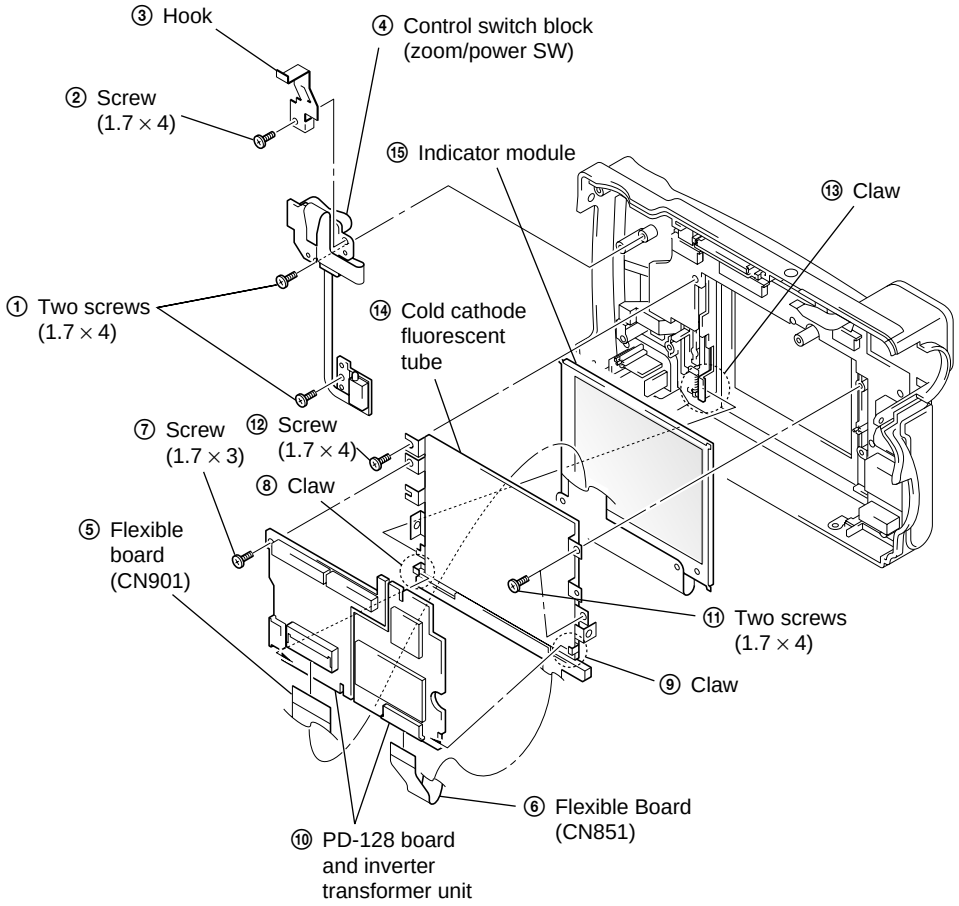

③ FP-027 flexible board (CN705)
⑧ Two connectors (CN701, 702)
⑦ Flexible board (CN708)
⑥ SY-58 and DD-141 board
⑤ Two screws (1.7 × 4)
⑨ Screw (1.7 × 3)
⑪ Connector (CN711)
⑫ DD-141 board
SY-58 board
DD-141 board
④ Screw (1.7 × 4)
② FP-029 flexible board (CN703)
⑩ Special head screw (M1.7)
① FP-028 flexible board (CN251)
Note: Do not remove these two screws.

[SERVICE POSITION]

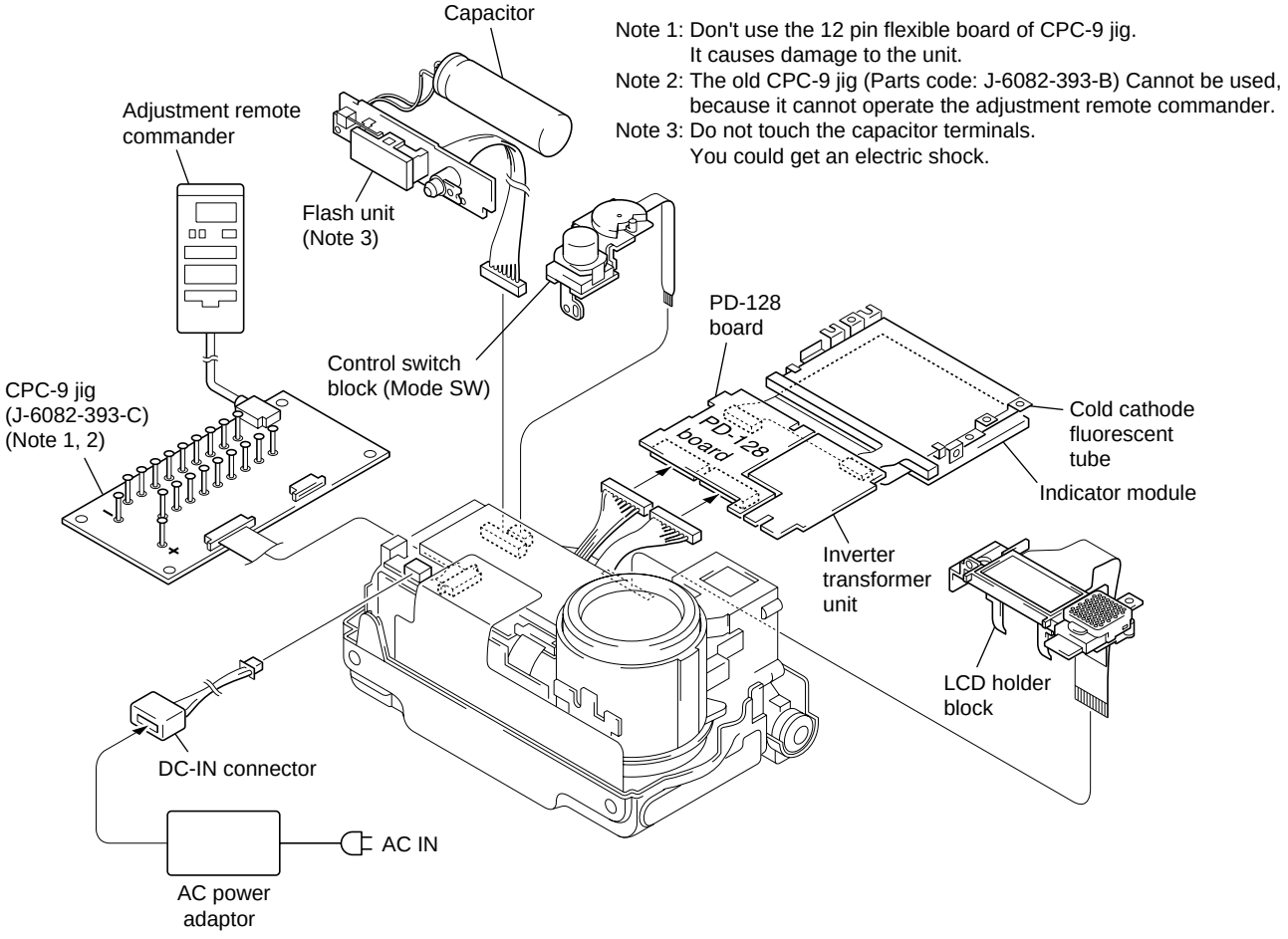


Note 1: Don't use the 12 pin flexible board of CPC-9 jig.
It causes damage to the unit.
Note 2: The old CPC-9 jig (Parts code: J-6082-393-B) Cannot be used,
because it cannot operate the adjustment remote commander.
Note 3: Do not touch the capacitor terminals.
You could get an electric shock.

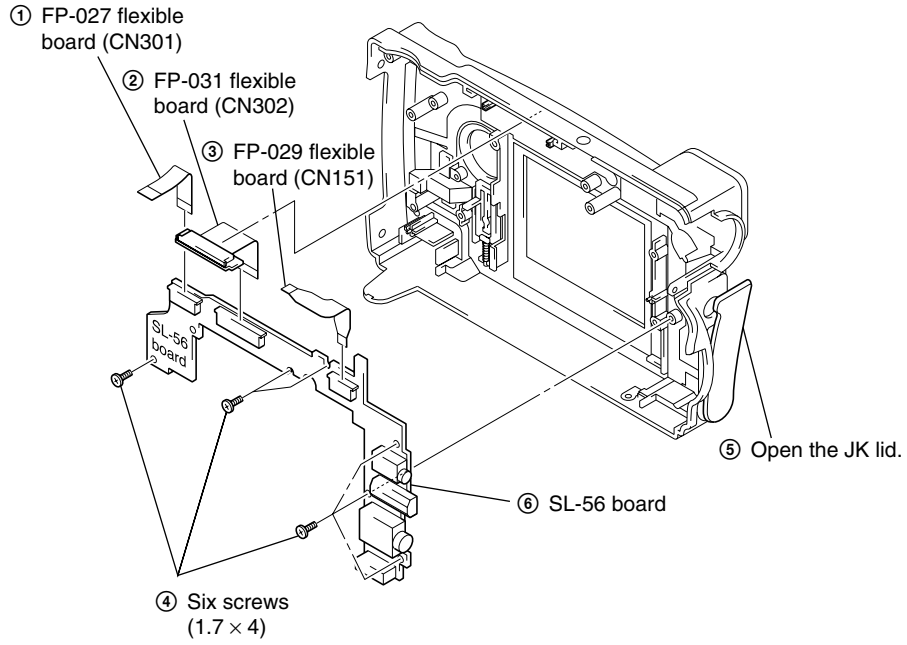
2-8. CONTROL SWITCH BLOCK, PD-128 BOARD AND INDICATOR MODULE


③ Hook
④ Control switch block (zoom/power SW)
② Screw (1.7 × 4)
⑮ Indicator module
⑬ Claw
① Two screws (1.7 × 4)
⑭ Cold cathode fluorescent tube
⑦ Screw (1.7 × 3)
⑫ Screw (1.7 × 4)
⑧ Claw
⑤ Flexible board (CN901)
⑪ Two screws (1.7 × 4)
⑨ Claw
⑥ Flexible Board (CN851)
⑩ PD-128 board and inverter transformer unit

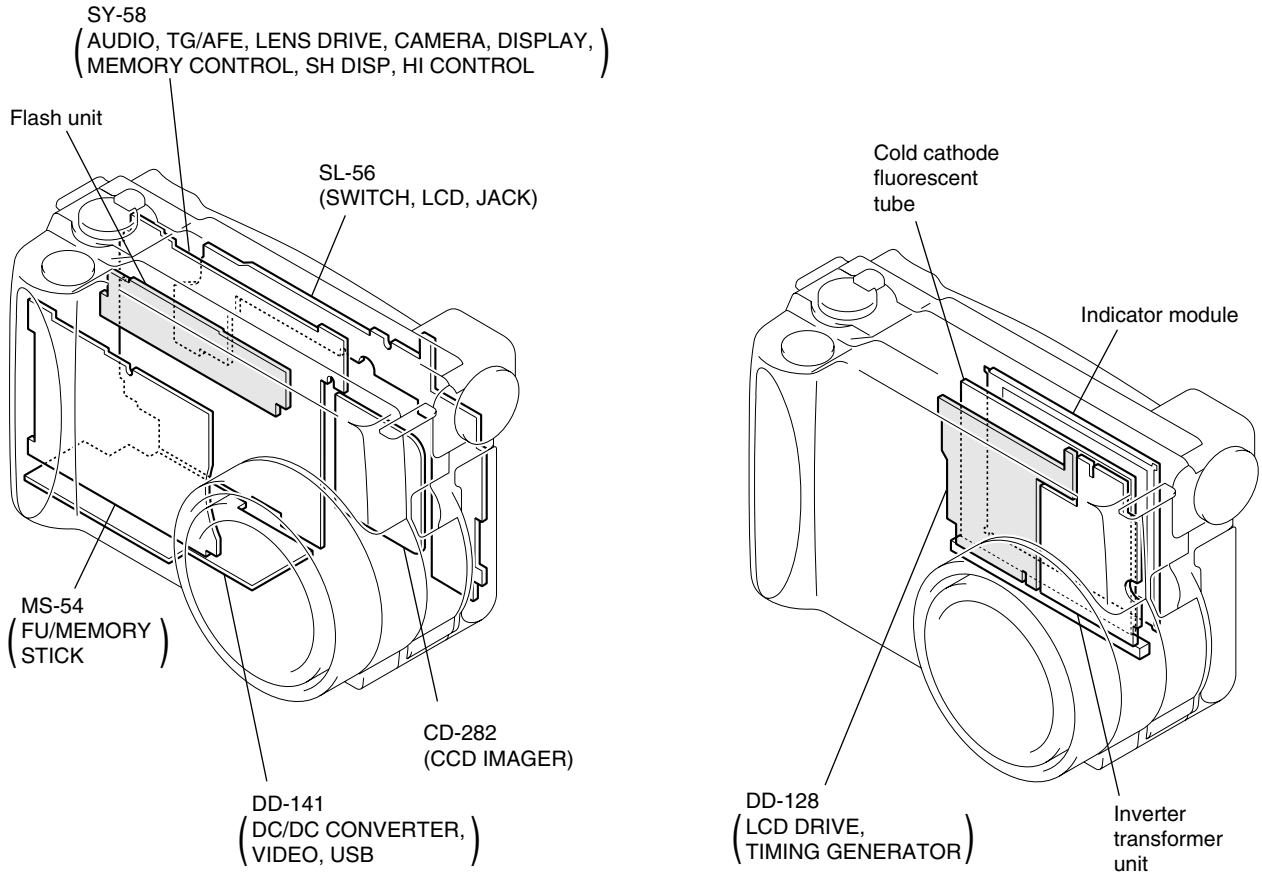
[SERVICE POSITION]


Capacitor
Note 1: Don't use the 12 pin flexible board of CPC-9 jig.
It causes damage to the unit.
Note 2: The old CPC-9 jig (Parts code: J-6082-393-B) Cannot be used,
because it cannot operate the adjustment remote commander.
Note 3: Do not touch the capacitor terminals.
You could get an electric shock.
Adjustment remote commander
Flash unit (Note 3)
PD-128 board
Control switch block (Mode SW)
CPC-9 jig (J-6082-393-C) (Note 1, 2)
PD-128 board
Cold cathode fluorescent tube
Indicator module
Inverter transformer unit
LCD holder block
DC-IN connector
AC IN
AC power adaptor

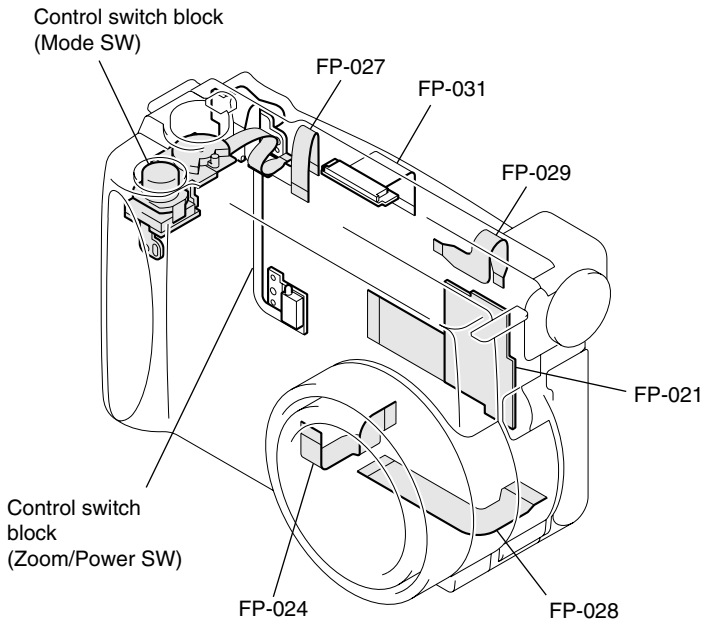
2-9. SL-56 BOARD


① FP-027 flexible board (CN301)
② FP-031 flexible board (CN302)
③ FP-029 flexible board (CN151)
SL-56 board
⑤ Open the JK lid.
⑥ SL-56 board
④ Six screws (1.7 × 4)

2-10. CIRCUIT BOARDS LOCATION

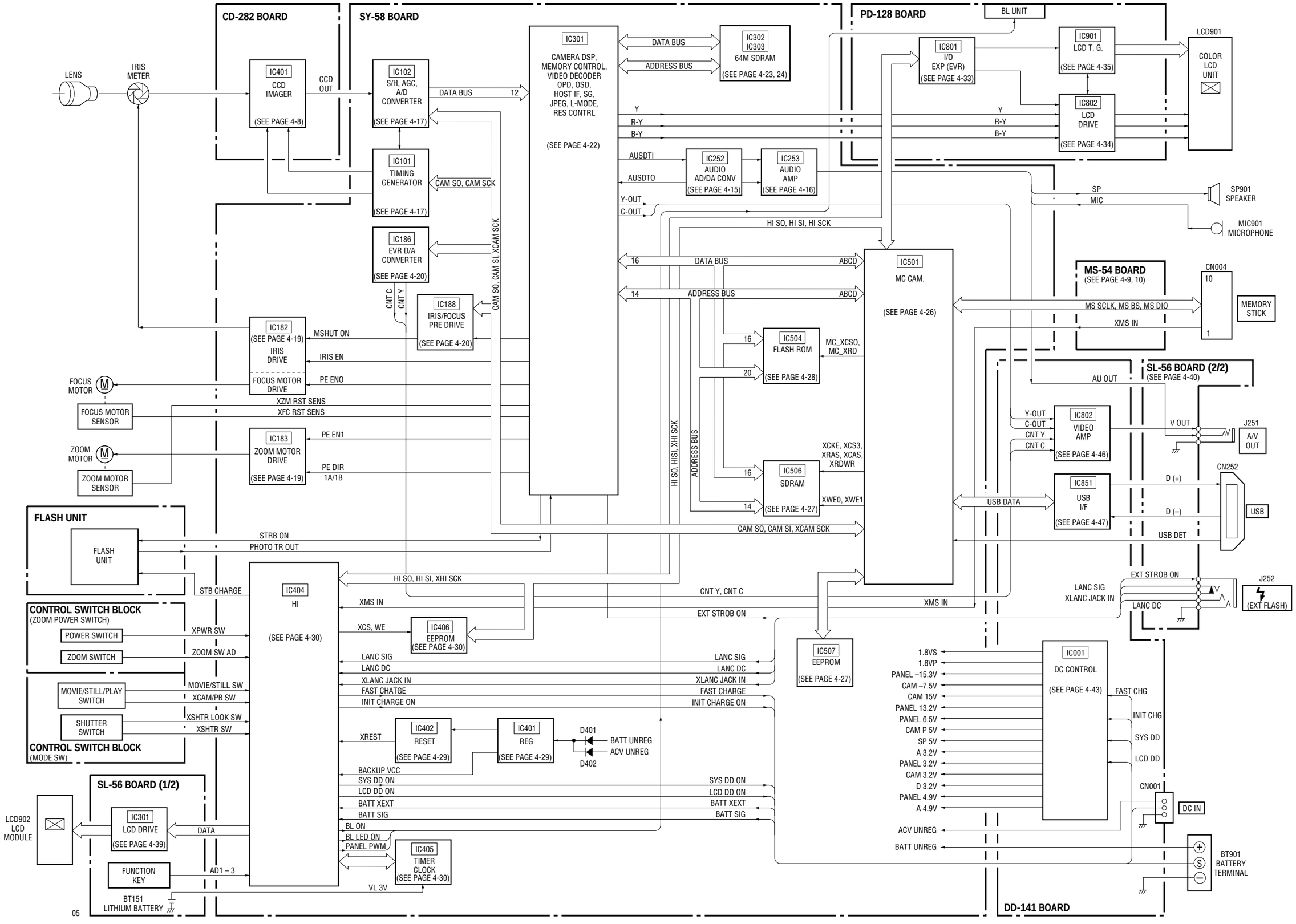


2-11. FLEXIBLE BOARDS LOCATION

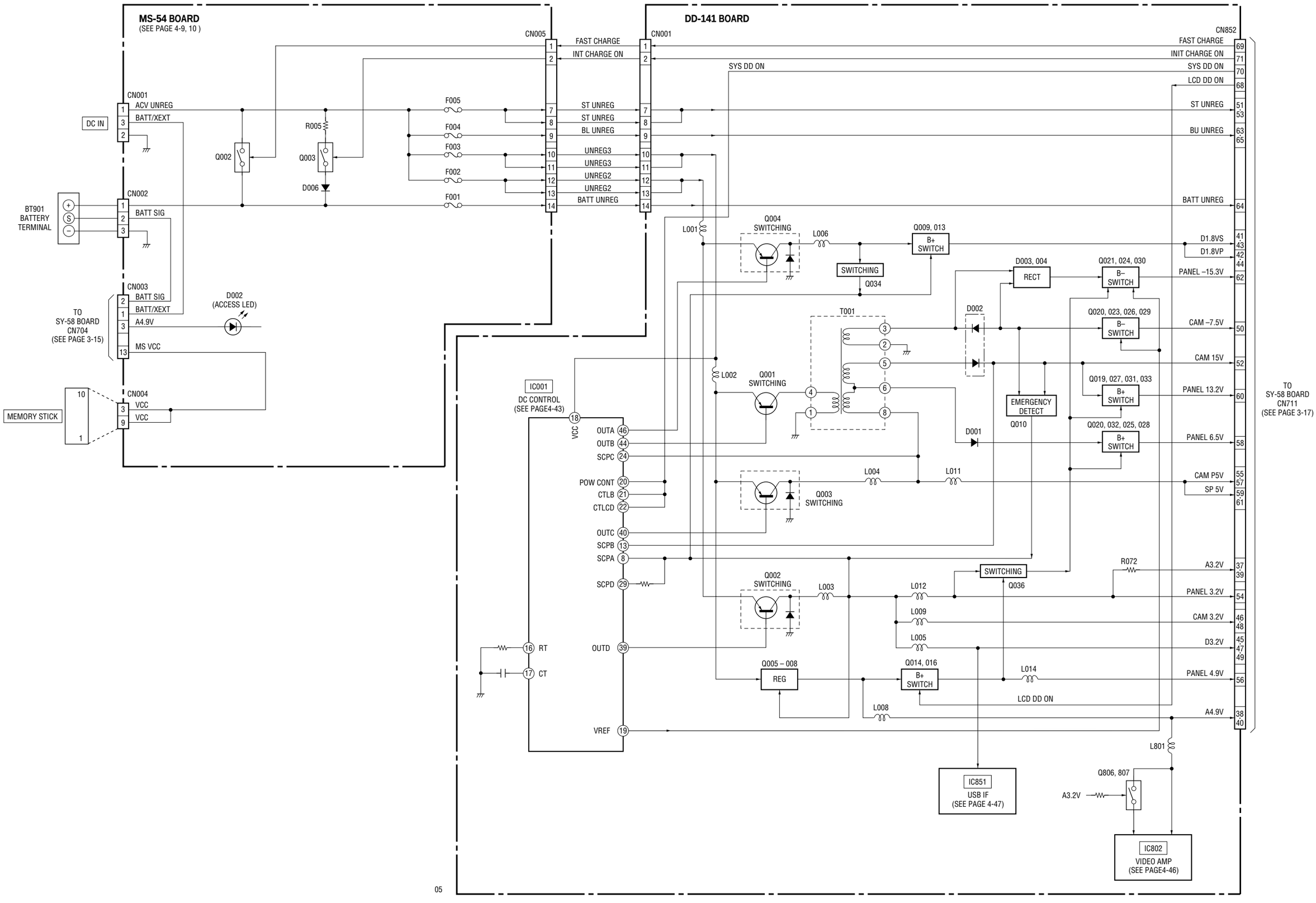


SECTION 3
BLOCK DIAGRAMS

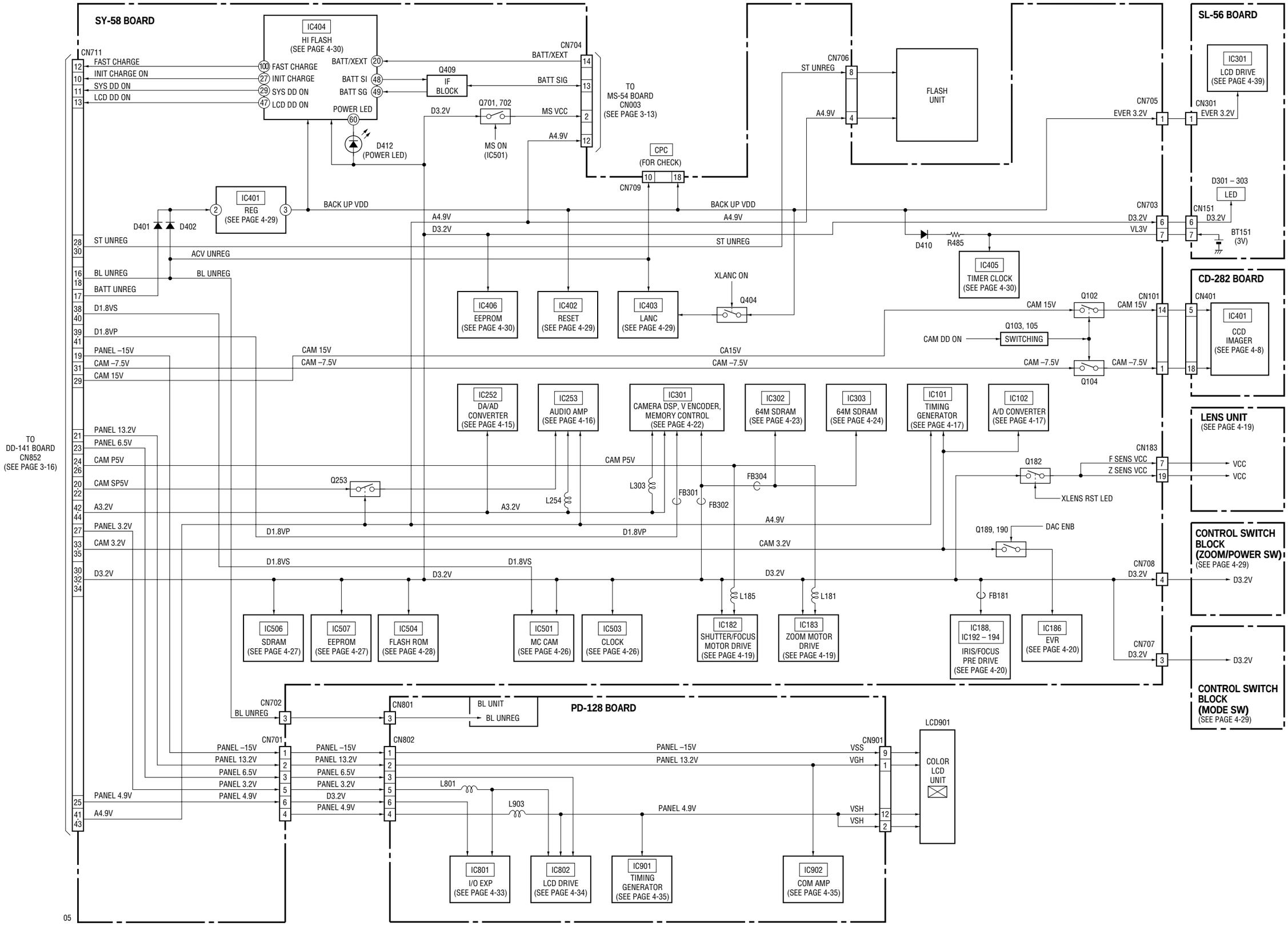
3-1. OVERALL BLOCK DIAGRAM



3-8. POWER BLOCK DIAGRAM 1



3-9. POWER BLOCK DIAGRAM 2

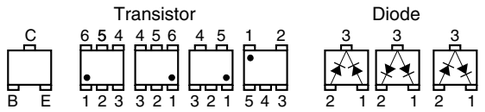


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

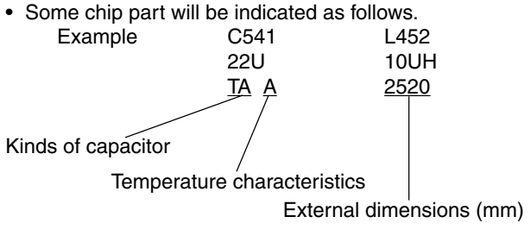
(For printed wiring boards)

- ▒▒: Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.



- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line *
- : B– Line *
- : IN/OUT direction of (+,–) B LINE. *
- : adjustment for repair. *
- Circled numbers refer to waveforms. *

* Indicated by the color red.

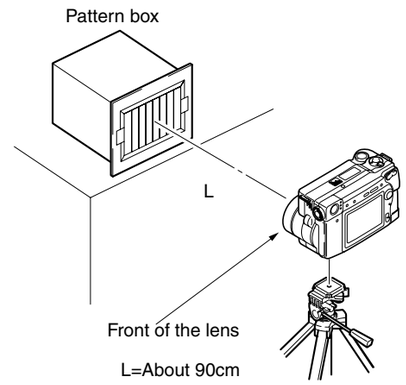
Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Note : Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms. *
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

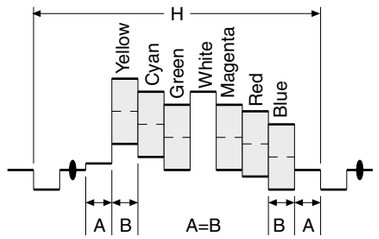


Fig. a (Video output terminal output waveform)

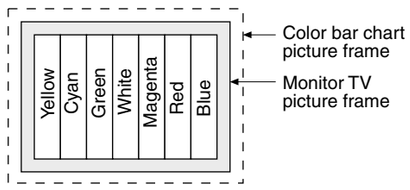
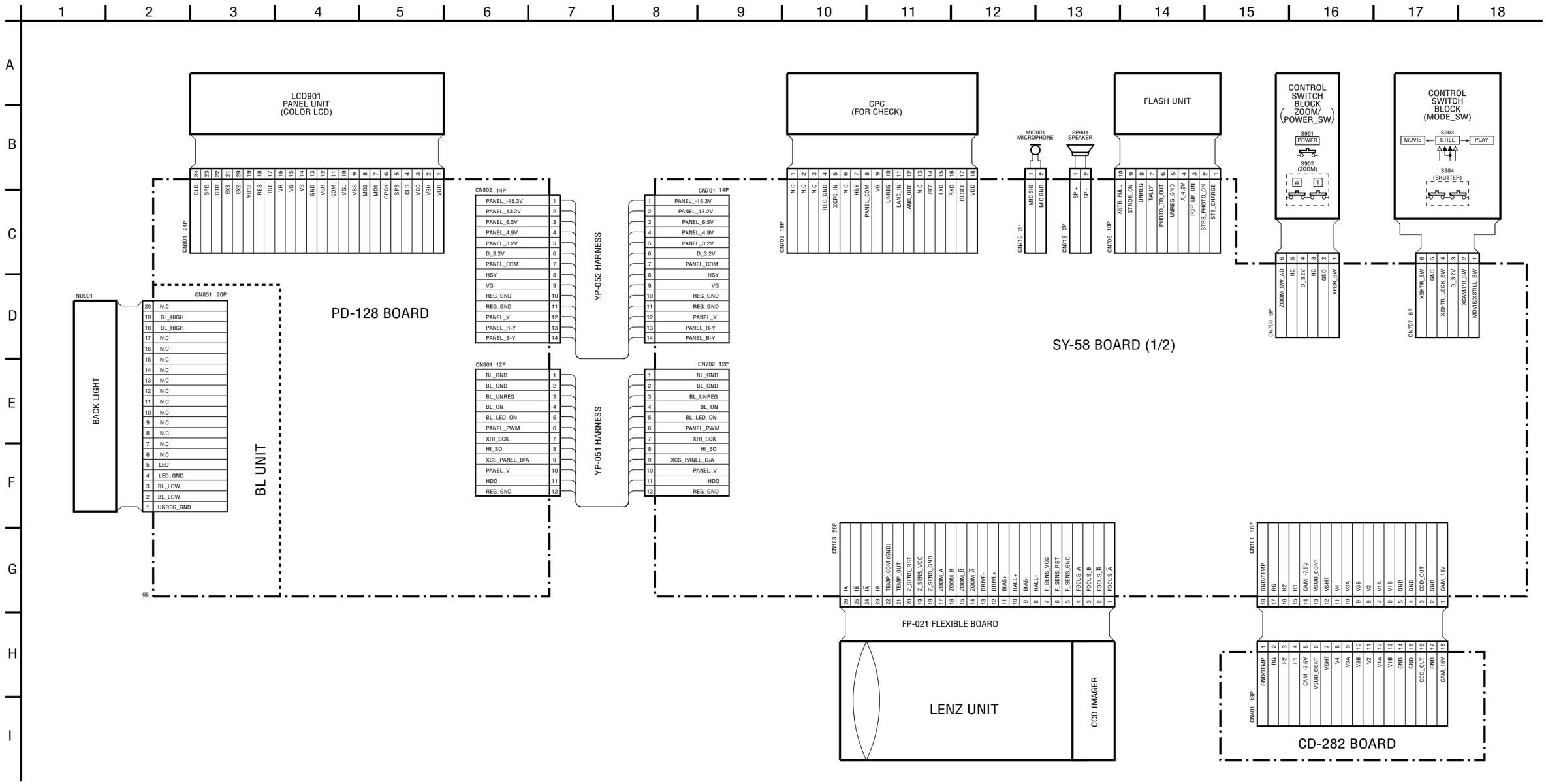


Fig.b (Picture on monitor TV)

When indicating parts by reference number, please include the board name.

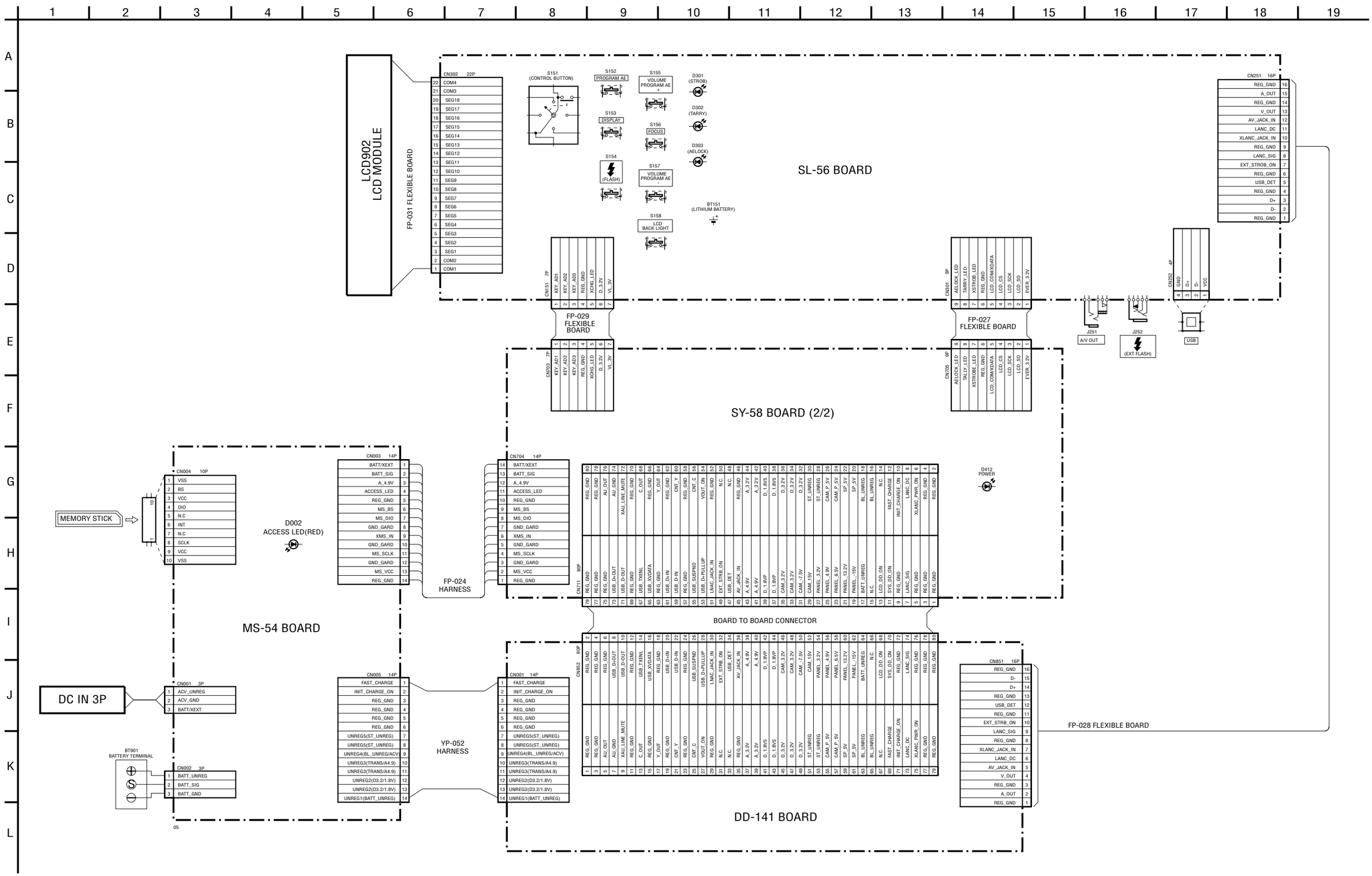
4-1. FRAME SCHEMATIC DIAGRAMS

FRAME SCHEMATIC DIAGRAM (1/2)


LCD901
PANEL UNIT
(COLOR LCD)
CN901 24P
CLD SPD CTR EX3 EX2 VB12 RES TST VR VG VB GND VSH COM VGL VSS MIZ MOT GPCK SPS CLS VCC VSH VGH
CN802 14P
PANEL_-15.3V PANEL_13.2V PANEL_6.5V PANEL_4.9V PANEL_3.2V D_3.2V PANEL_COM HSY VG REG_GND REG_GND PANEL_Y PANEL_R-Y PANEL_B-Y
YP-052 HARNESS
CN701 14P
PANEL_-15.3V PANEL_13.2V PANEL_6.5V PANEL_4.9V PANEL_3.2V D_3.2V PANEL_COM HSY VG REG_GND REG_GND PANEL_Y PANEL_R-Y PANEL_B-Y
CN801 12P
BL_GND BL_GND BL_UNREG BL_ON BL_LED_ON PANEL_PWM XHI_SCK HI_SO XCS_PANEL_D/A PANEL_V HDO REG_GND
YP-051 HARNESS
CN702 12P
BL_GND BL_GND BL_UNREG BL_ON BL_LED_ON PANEL_PWM XHI_SCK HI_SO XCS_PANEL_D/A PANEL_V HDO REG_GND
ND901
BACK LIGHT
CN851 20P
N.C BL_HIGH BL_HIGH N.C N.C N.C N.C N.C N.C N.C N.C N.C N.C N.C LED LED_GND BL_LOW BL_LOW UNREG_GND
BL UNIT
PD-128 BOARD
CPC
(FOR CHECK)
CN709 18P
N.C N.C N.C REG_GND XCPC_IN N.C HSY PANEL_COM VG UNREG LANC_IN LANC_OUT N.C RF7 TXD RXD RESET VDD
MIC901
MICROPHONE
CN710 2P
MIC_SIG MIC_GND
SP901
SPEAKER
CN712 2P
SP+ SP-
FLASH UNIT
CN706 10P
XSTB_FULL STROB_ON UNREG TALLY PHOTO_TR_OUT UNREG_GND A_4.9V POP_UP_ON STRB_PHOTO_ON STB_CHARGE
CONTROL
SWITCH
BLOCK
(ZOOM/
POWER_SW)
S901
POWER
S902
(ZOOM)
W T
CN708 6P
ZOOM_SW_AD NC D_3.2V NC GND XPER_SW
CONTROL
SWITCH
BLOCK
(MODE_SW)
S903
MOVIE STILL PLAY
S904
(SHUTTER)
CN707 6P
XSHTR_SW GND XSHTR_LOCK_SW D_3.2V XCAM/PB_SW MOVIE/STILL_SW
SY-58 BOARD (1/2)
CN183 26P
IA IB IA IB TEMP_COM (GND) TEMP_OUT Z_SENS_RST Z_SENS_VCC Z_SENS_GND ZOOM_A ZOOM_B ZOOM_B ZOOM_A DRIVE- DRIVE+ BIAS+ HALL+ BIAS- HALL- F_SENS_VCC F_SENS_RST F_SENS_GND FOCUS_A FOCUS_B FOCUS_B FOCUS_A
FP-021 FLEXIBLE BOARD
LENZ UNIT
CCD IMAGER
CN101 18P
GND/TEMP RG H2 H1 CAM_-7.5V VSUB_COMT VSHT V4 V3A V3B V2 V1A V1B GND GND CCD_OUT GND CAM_15V
CN401 18P
GND/TEMP RG H2 H1 CAM_-7.5V VSUB_COMT VSHT V4 V3A V3B V2 V1A V1B GND GND CCD_OUT GND CAM_15V
CD-282 BOARD

FRAME (1/2)

FRAME SCHEMATIC DIAGRAM (2/2)



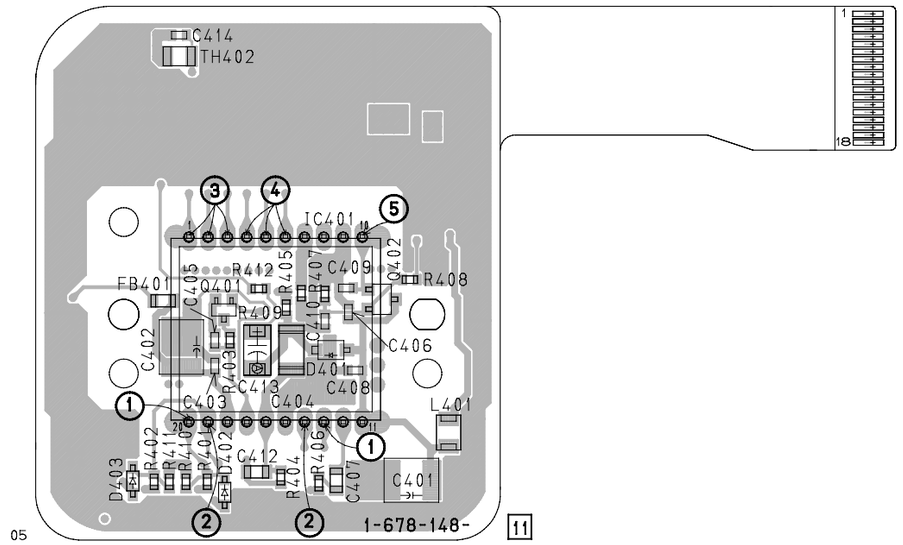
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

CD-282 (CCD IMAGER) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

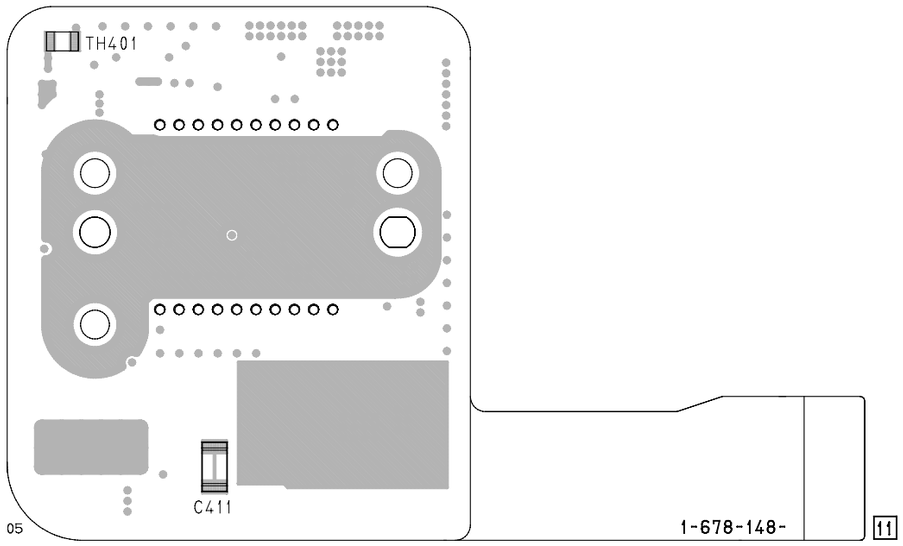
– Ref. No.: CD-282 board; 2,000 series –

- **For Printed Wiring Board.**
- CD-282 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor

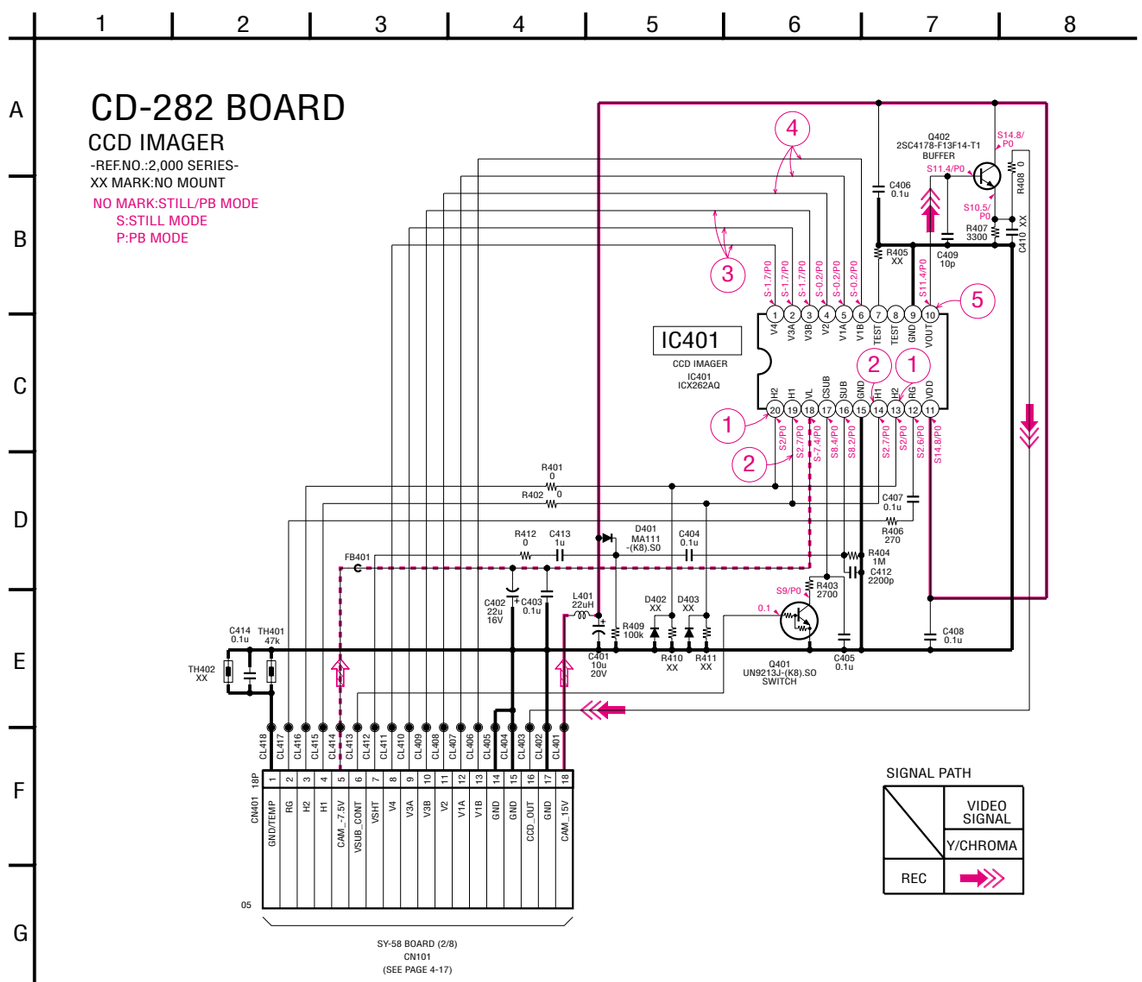
CD-282 BOARD (SIDE A)



CD-282 BOARD (SIDE B)



• See page 4-49 for waveforms.



Precautions for Replacement of CCD Imager

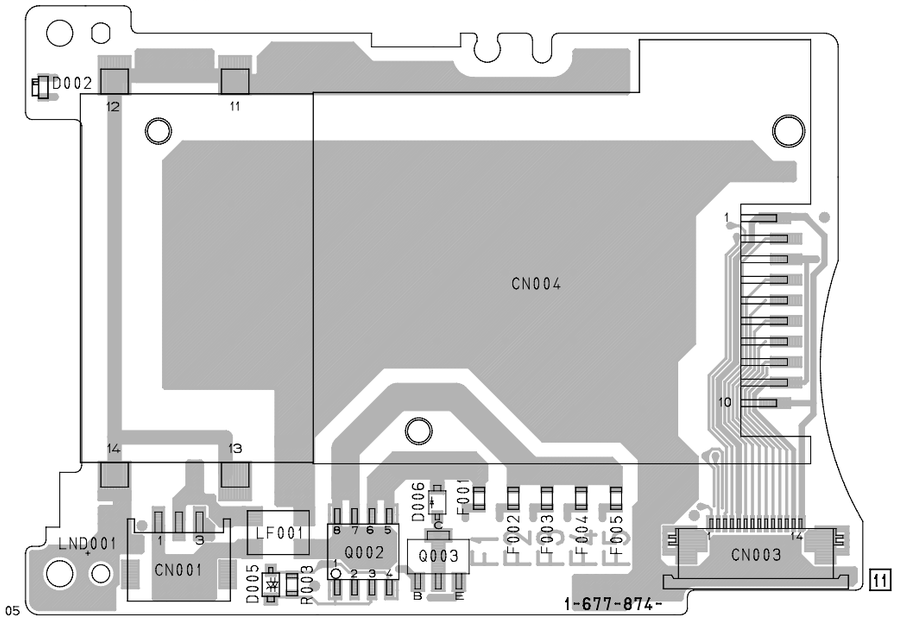
- The CD-282 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

MS-54 (FU, MEMORY STICK) PRINTED WIRING BOARD AND SHEMATIC DIAGRAM

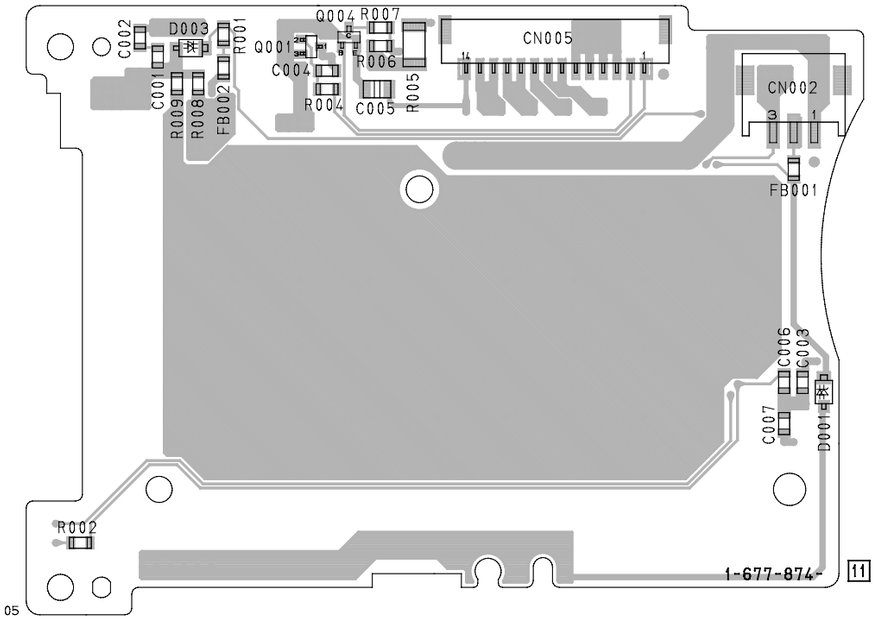
– Ref. No.: MS-54 board; 2,000 series –

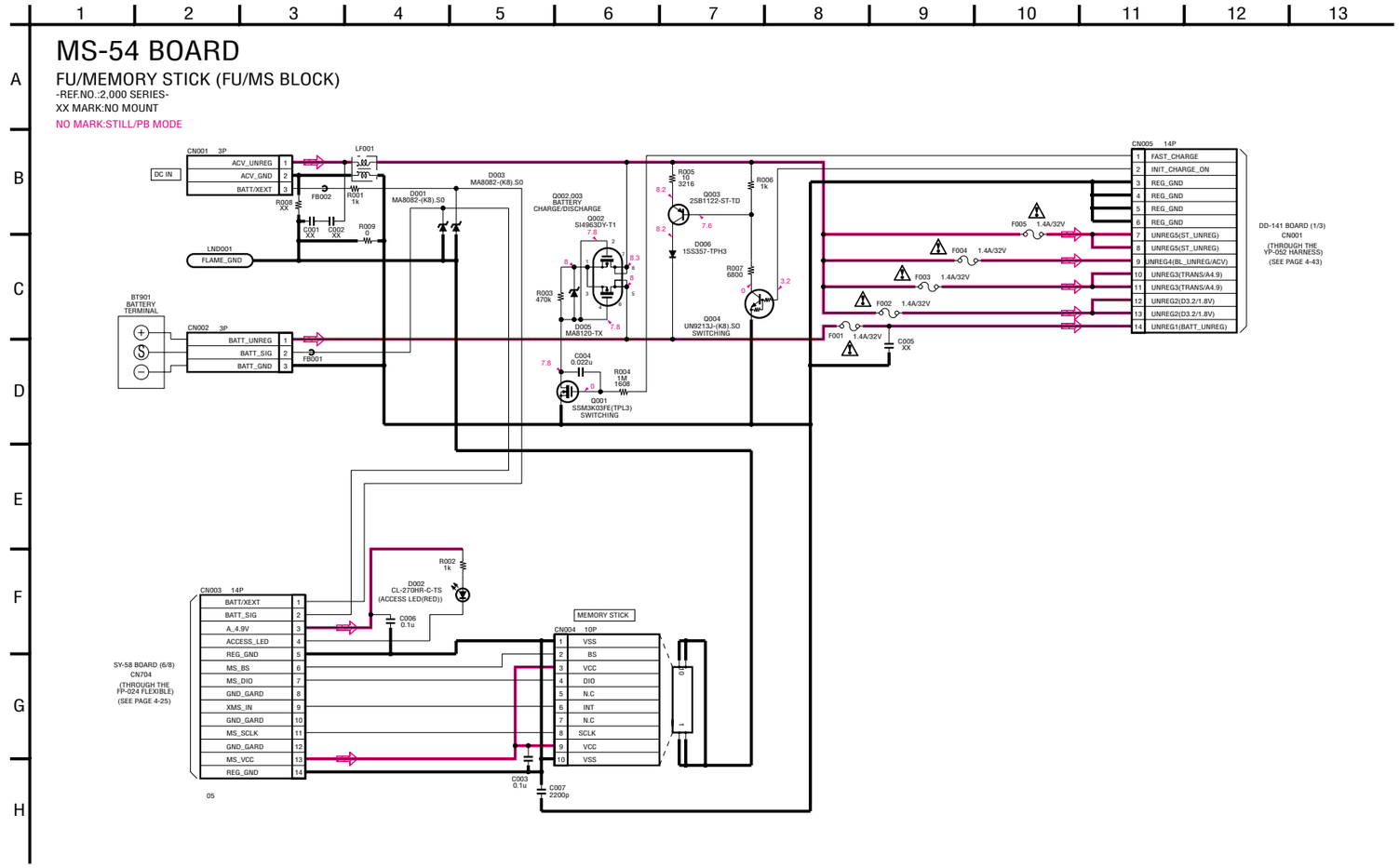
- **For Printed Wiring Board.**
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor

MS-54 BOARD (SIDE A)



MS-54 BOARD (SIDE B)



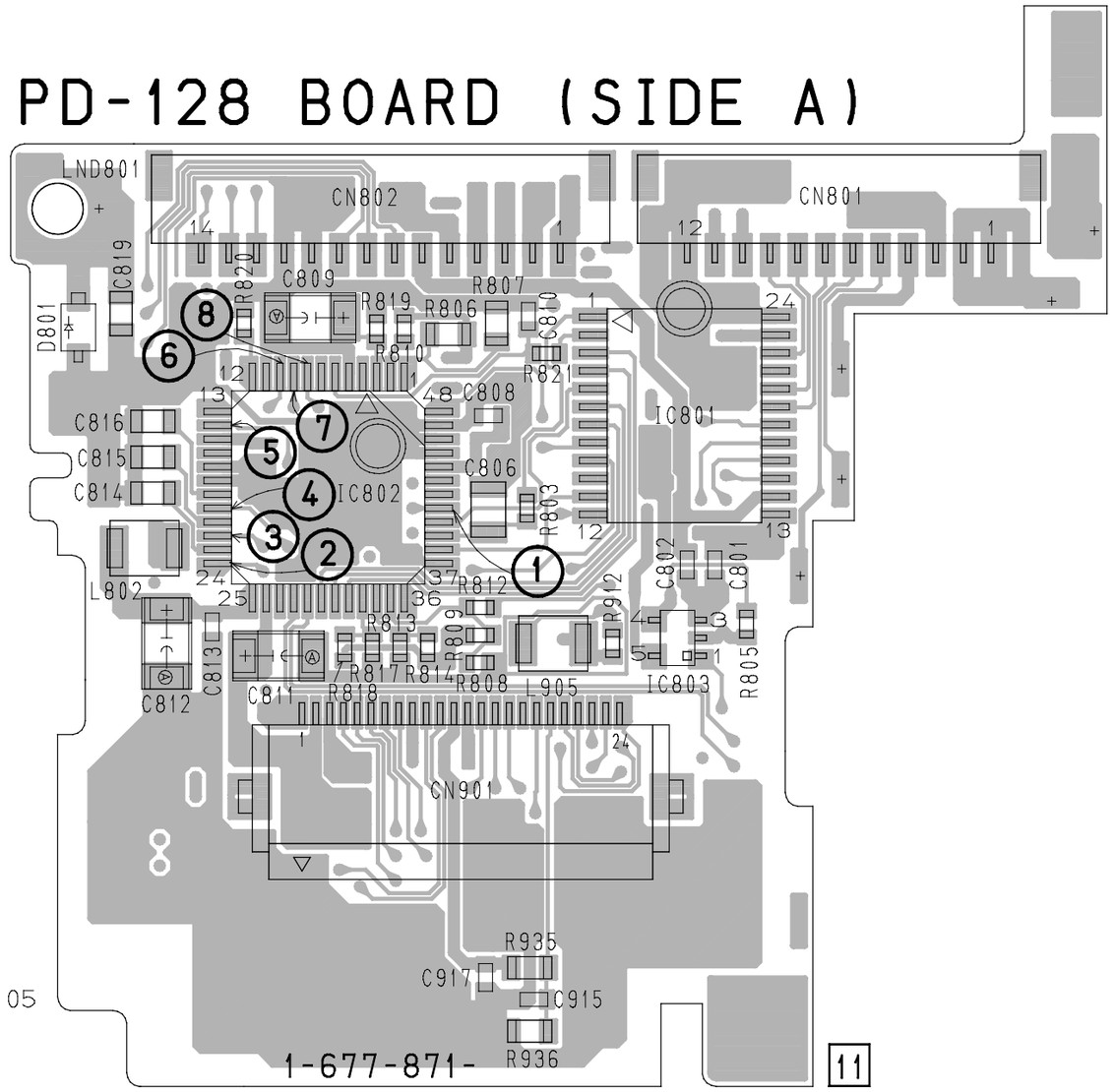


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

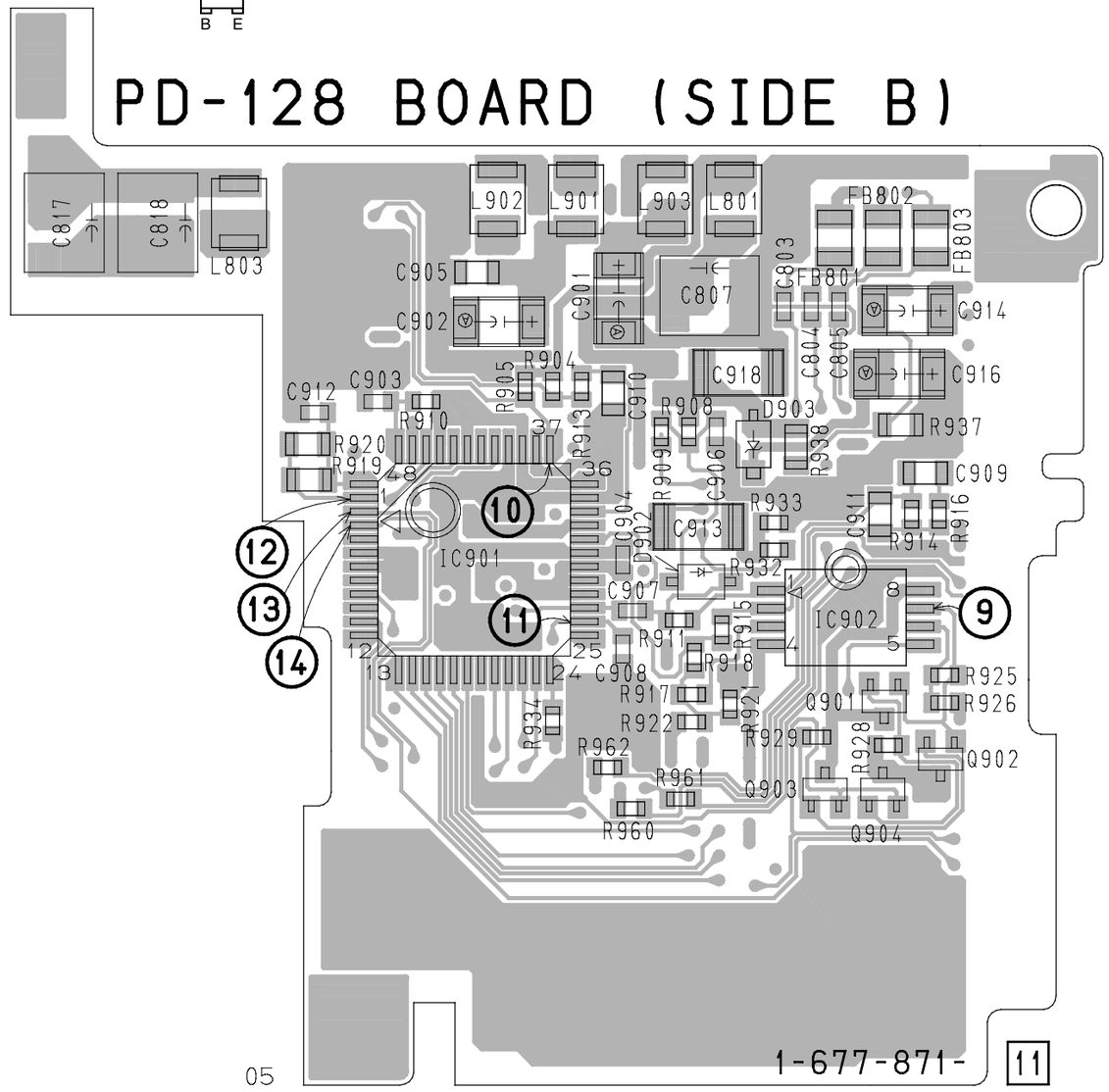
PD-128 (TG, LCD) PRINTED WIRING BOARD
– Ref. No.: PD-128 board; 2,000 series –

- **For Printed Wiring Board.**
- PD-128 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor

PD-128 BOARD (SIDE A)



PD-128 BOARD (SIDE B)



PD-128 (LCD DRIVE) SCHEMATIC DIAGRAM • **See page 4-49 for waveforms.**

PD-128 BOARD (1/2)

LCD DRIVE (RGB BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT
NO MARK:STILL/PB MODE

ND901 BACK LIGHT

CN851 20P: 1 UNREG_GND, 2 BL_LOW, 3 BL_LOW, 4 LED_GND, 5 LED, 6 N.C, 7 N.C, 8 N.C, 9 N.C, 10 N.C, 11 N.C, 12 N.C, 13 N.C, 14 N.C, 15 N.C, 16 N.C, 17 N.C, 18 BL_HIGH, 19 BL_HIGH, 20 N.C

⚠ BL UNIT

CN801 12P: 1 BL_GND, 2 BL_GND, 3 BL_UNREG, 4 BL_ON, 5 BL_LED_ON, 6 PANEL_PWM, 7 XHI_SCK, 8 HI_SO, 9 XCS_PANEL_D/A, 10 PANEL_V, 11 HDO, 12 REG_GND

SY-58 BOARD (8/8) CN702 (THROUGH THE YP-051 HARNESS) (SEE PAGE 4-29)

JL001 JL002 JL003 JL004 JL005

L803 4.7uH
L801 100uH
L802 10uH

C817 22u 16V
C818 22u 16V
C819 2200p

LND801 STATIC_GND

D801 MA111-(K8).S0

PANEL_V HDO → ① PD-128 BOARD (2/2)

CN802 14P: 1 PANEL_-15.3V, 2 PANEL_13.2V, 3 PANEL_6.5V, 4 PANEL_4.9V, 5 PANEL_3.2V, 6 D_3.2V, 7 PANEL_COM, 8 HSY, 9 VG, 10 REG_GND, 11 REG_GND, 12 PANEL_Y, 13 PANEL_R-Y, 14 PANEL_B-Y

SY-58 BOARD (7/8) CN701 (THROUGH THE YP-051 HARNESS) (SEE PAGE 4-27)

PANEL_-15.3V PANEL_13.2V PANEL_4.9V PANEL_3.2V → ② PD-128 BOARD (2/2)

PANEL_COM HSY → ③ PD-128 BOARD (2/2)

05

IC801 MB40D001PFV-G-BND-ER

3.1	22 VDD	P_MUTE 24	3.1
3.2	14 VCC	BRT_TST 11	3.1
H_REV 3.2	15 H_REV	BL_LEVEL 10	
V_REV 3.2	16 V_REV	V-COM 9	1.8 V-COM
NTSC 3.2	17 NTSC	VCO 8	1.2 VCO
COMTST 0	18 COMTST	COM_ADJ 7	0.9 COM_ADJ
2.9	19 CLK	RGB_AMP 6	2.3 AMP
0.1	20 SI	CONT 5	2
	21 SO	BRT_B 4	1.8 BRT_B
3	23 XEN	BRT_R 3	2.3 BRT_R
3.1	13 VDDA	COLOR 2	1.1 COLOR
	24 VSS	BRIGHT 1	1.9

IC801 I/O EXP (EVR)

C801 0.1u
C802 0.1u
C807 47u 6.3V
C808 0.1u
C806 0.1u
R803 0
R805 0

IC803 XX: INB 1 VCC 5, INA 2, GND 3, OUT 4

R808 22k
R809 12k
R812 47k
R813 15k
R814 33k
R817 12k
R818 39k
C811 10u 10V
C812 10u 10V
C813 0.1u

COM_ADJ BRT_B BRT_B AMP FRPV FRPT

P_4.9V

COM_BLK_LVL 36 1.9, COM_AMP 35 1.1, GAMMA2 34 0.8, GAMMA0 33 2.3, SUB_BRT_R 32 2.3, SUB_BRT_B 31 2.4, RGB_AMP 30 2.4, FRP 29 2.4, COM_FRP 28, OUT_LIM 27 4.9, VSH 26 6.5, VCC2 25

COM_BLK 37 3.2
XTEST 38
BRIGHT 39 1.9
CONTRAST 40 2
COM_OUT 41 ①
SUB_CON_B 42
SUB_CON_R 43
VCC1 44 3.1
OSD_B 45
OSD_G 46
OSD_R 47
BLACK_IN 48 4.9

IC802 LCD DRIVE IC802 IR3Y37A4

B_OUT 24 2.5
B_DC_DET 23 2 → C814 1u
G_OUT 22 2.5
G_DC_DET 21 2.1 → C815 1u
R_OUT 20 2.5
R_DC_DET 19 2 → C816 1u
GND1 18
GND2 17
SYNC_OUT 16
SYNC_IN 15 3.1
EXT_BGP 14 4.6
SYNC_SEP 13

② VB VG VR COM-O FRPV FRPT P_XHD → ④ PD-128 BOARD (2/2)

PICTURE 1, YCR/XRGB_SW 2, AGC_FIL 3, AGC_OUT 4, AGC_LVL 5, COLOR 6, H_FIL_IN 7, G/Y 8, R/R-Y/CR 9, B/B-Y/CB 10, H_FIL 11, REG_OUT 12

COMTST NTSC V_REV H_REV V-COM VCO

R806 XX
R807 XX
R810 0
R819 XX
C809 XX 6.3V
C810 0.1u
R820 100k
R821 10k

REG_GND W_MSK

FB801 FB802 FB803
C803 0.01u
C804 0.01u
C805 0.01u

SIGNAL PATH

	VIDEO SIGNAL	
	CHROMA	Y
REC	→	⇒
PB	⇨	⇒

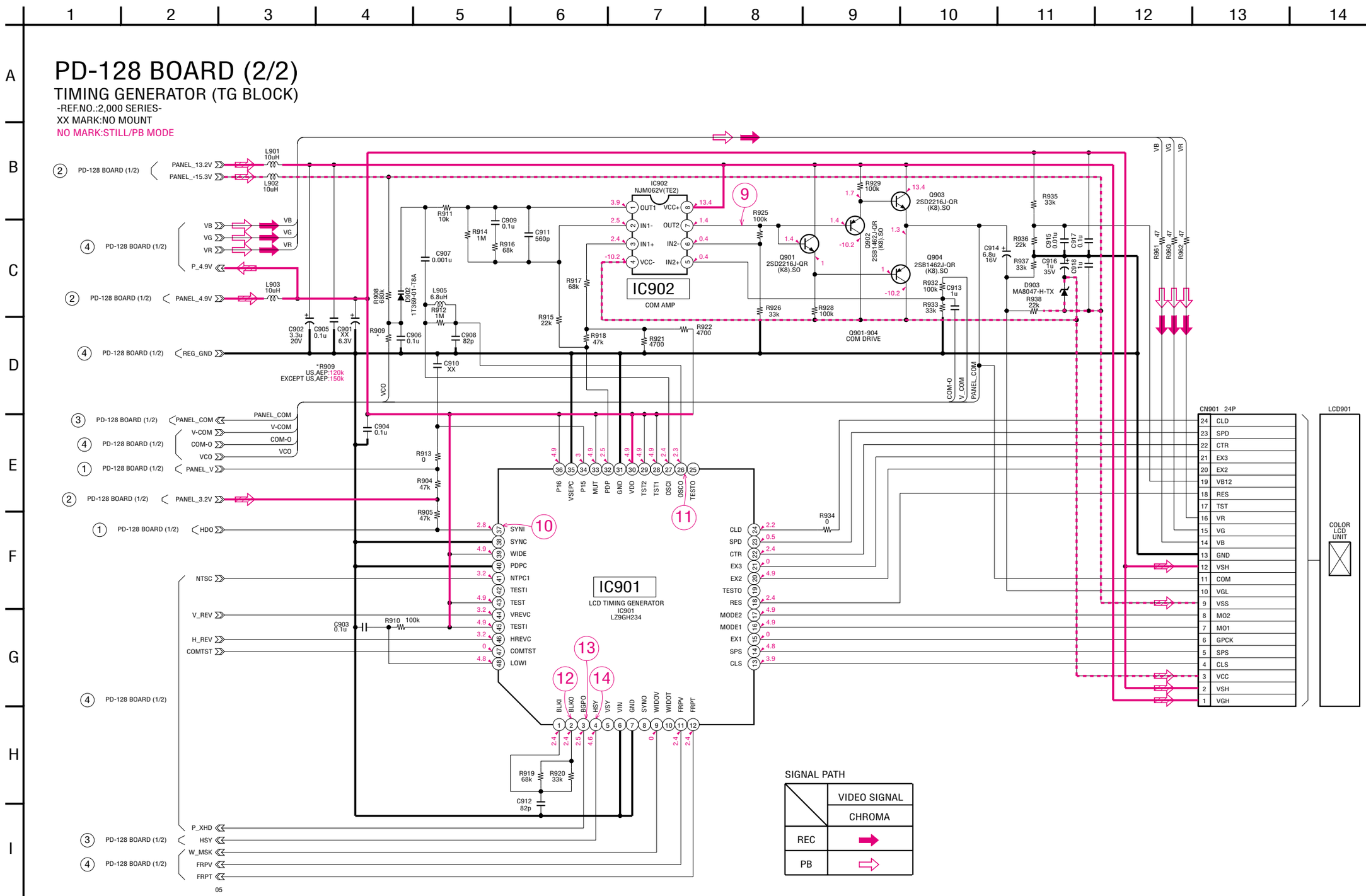
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

PD-128 (TIMING GENERATOR) SCHEMATIC DIAGRAM • See page 4-31 for PD-128 printed wiring board. • See page 4-49 for waveforms.

PD-128 BOARD (2/2)

TIMING GENERATOR (TG BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT
NO MARK:STILL/PB MODE



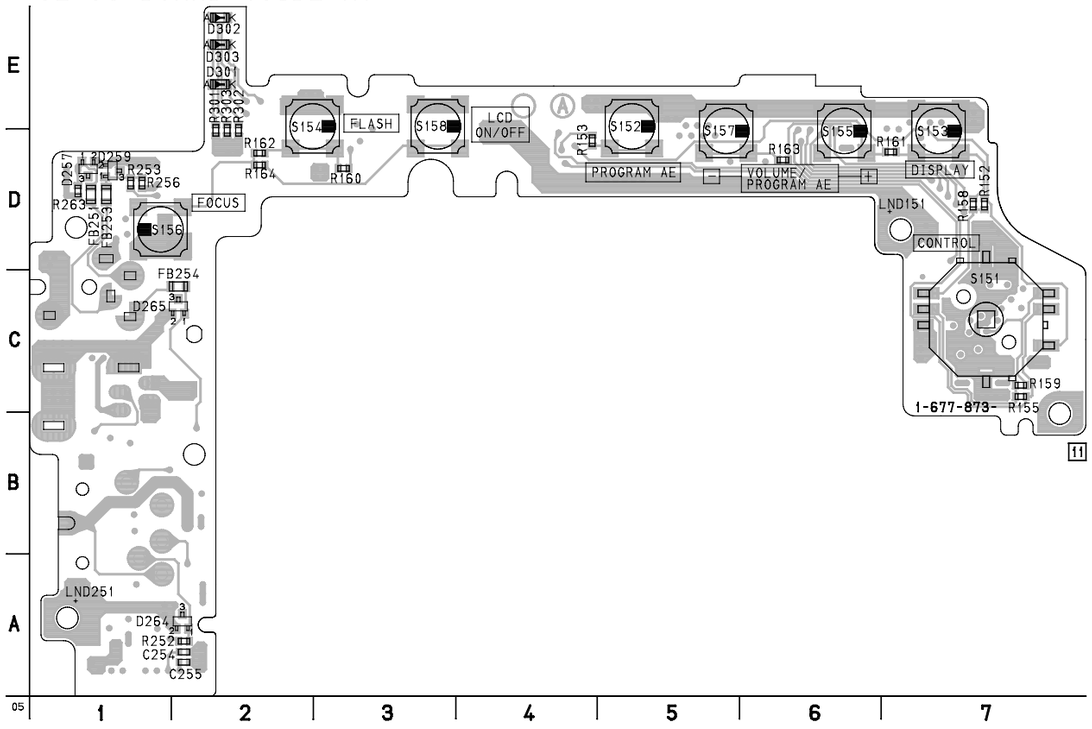
SIGNAL PATH

	VIDEO SIGNAL
	CHROMA
REC	➡
PB	⇨

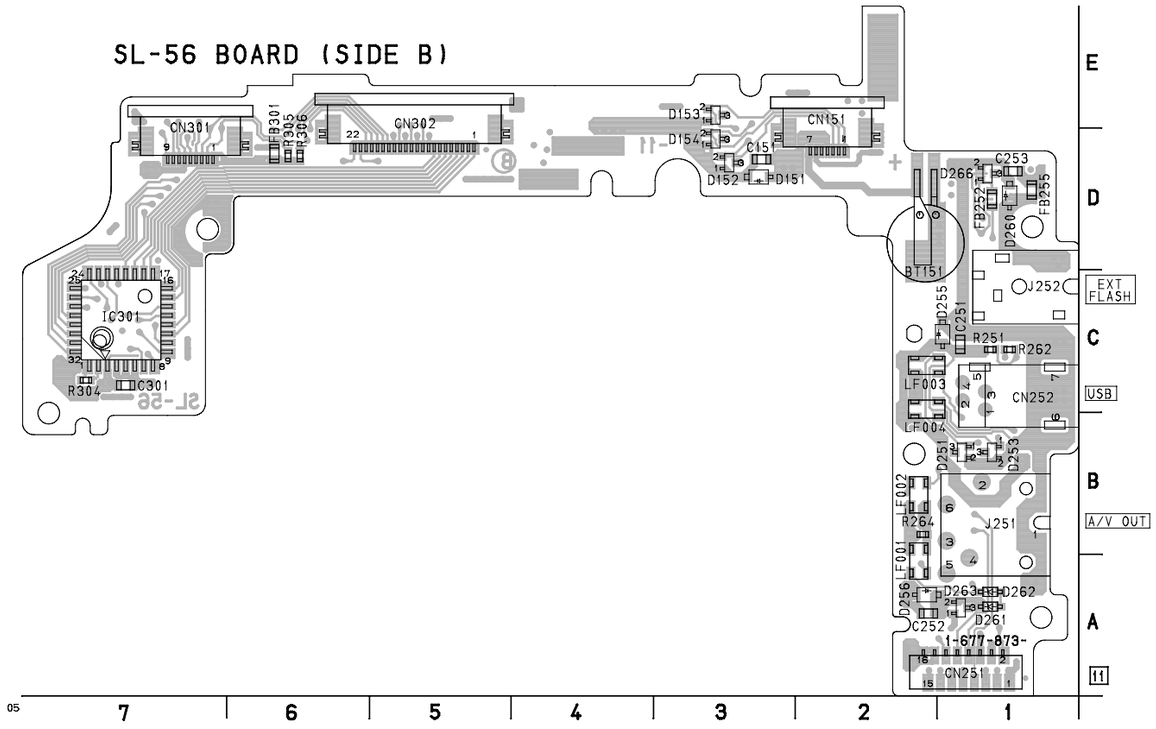
SL-56 (SWITCH, LCD, JACK) PRINTED WIRING BOARD
– Ref. No.: SL-56 board; 2,000 series –

- **For Printed Wiring Board.**
- SL-56 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-52 for printed parts location.
- Chip Diode

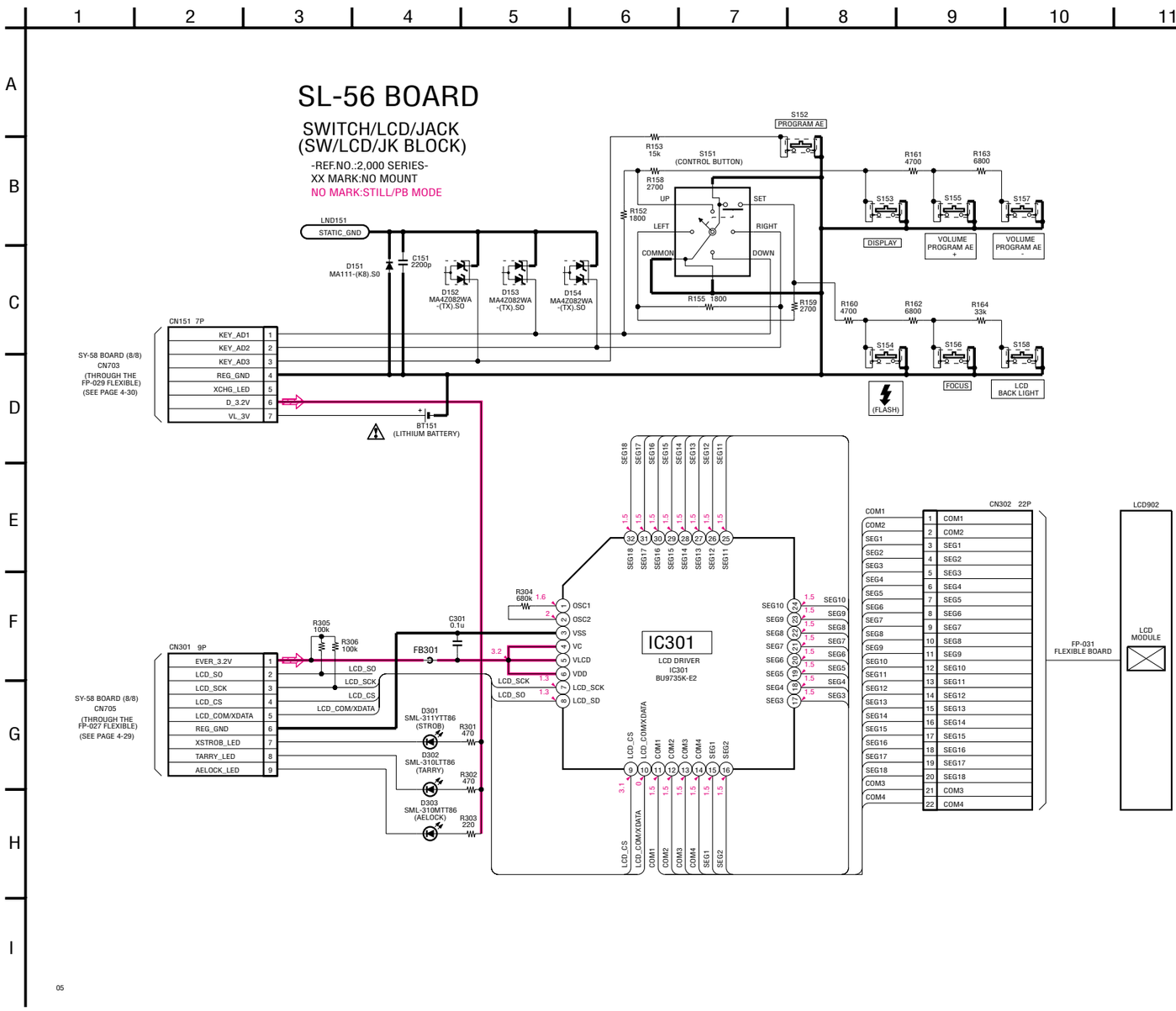
SL-56 BOARD (SIDE A)



SL-56 BOARD (SIDE B)



SL-56 (SWITCH, LCD, JACK) SCHEMATIC DIAGRAM • See page 4-37 for SL-56 printed wiring board.



SIGNAL PATH

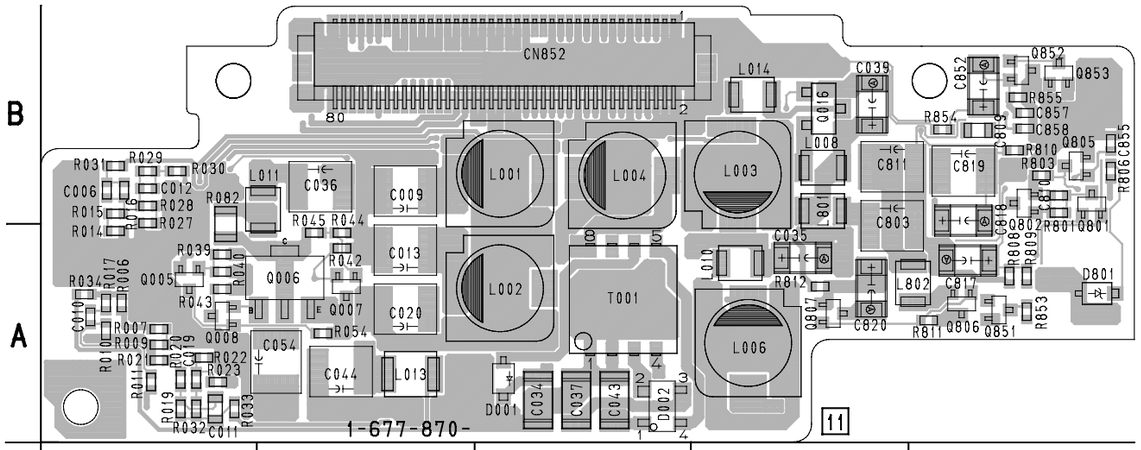
	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
REC	⇛	⇒
PB	⇛	⇒

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

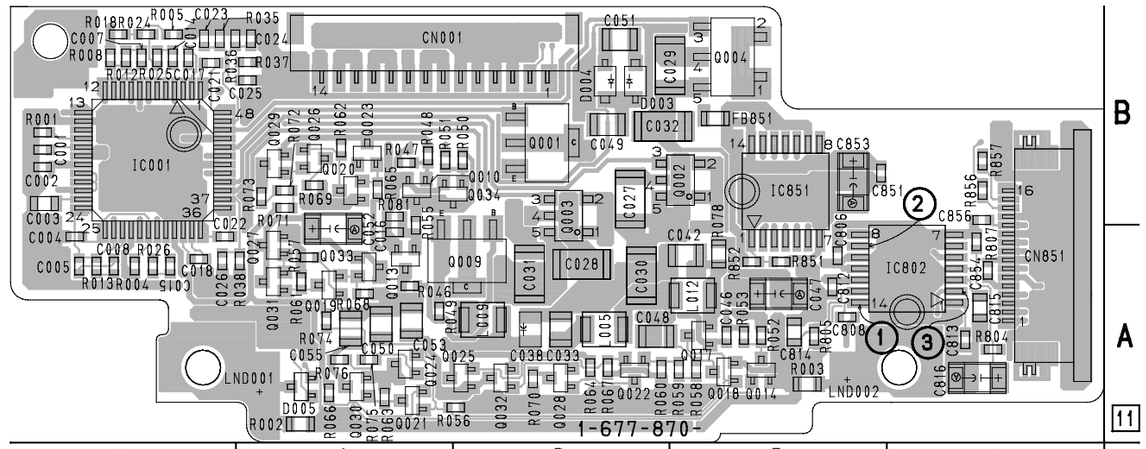
DD-141 (DC/DC CONVERTER, VIDEO, USB) PRINTED WIRING BOARD
– Ref. No.: DD-141 board; 1,000 series –

- **For Printed Wiring Board.**
- DD-141 board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-52 for printed parts location.
- Chip transistor

DD-141 BOARD (SIDE A)



DD-141 BOARD (SIDE B)



DD-141 (DC/DC CONVERTER) SCHEMATIC DIAGRAM • See page 4-41 for DD-141 printed wiring board.

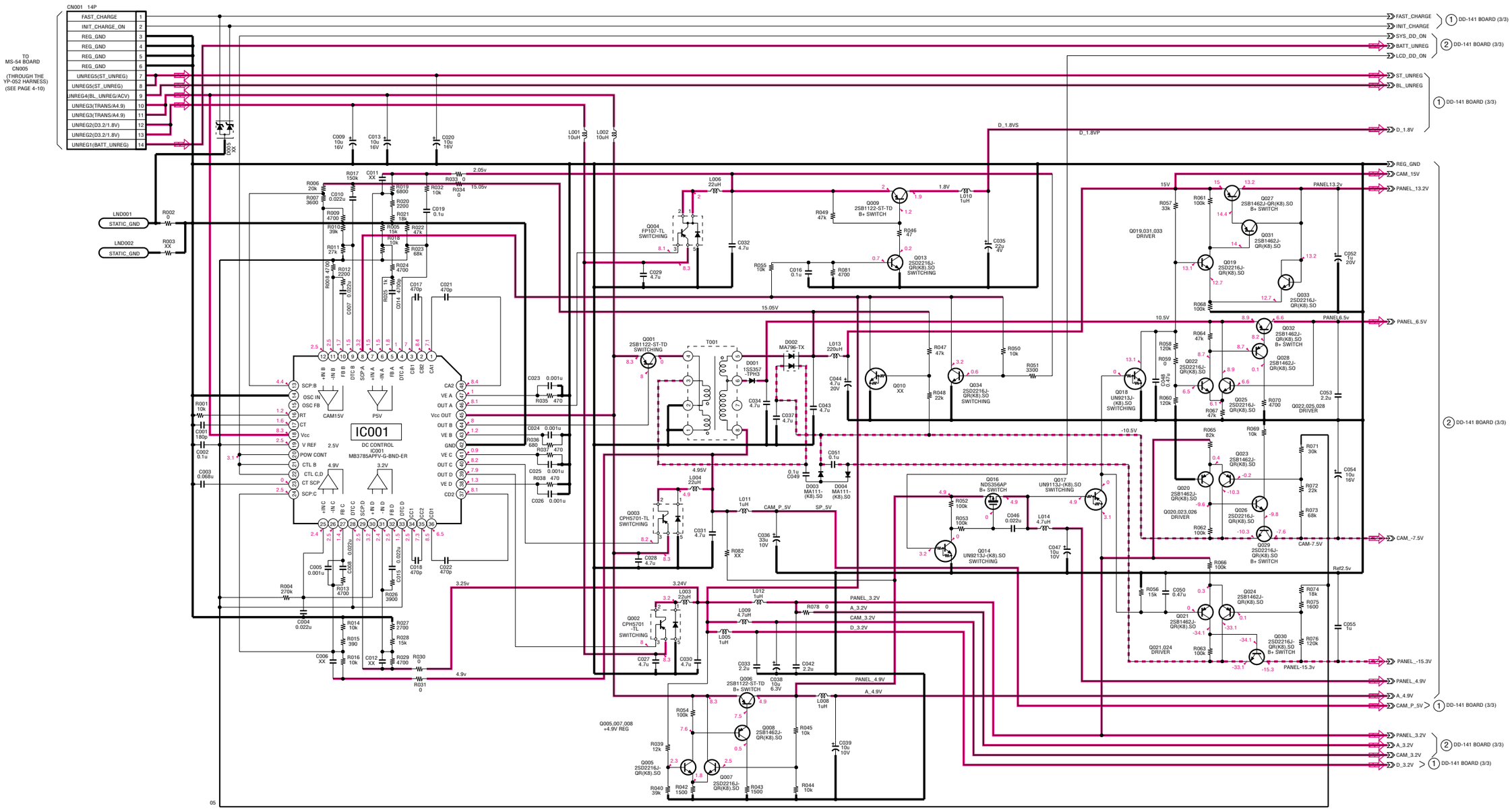
DD-141 BOARD (1/3)

DC/DC CONVERTER (DD BLOCK)

NO MARK:STILL/PB MODE

-REF.NO.:1,000 SERIES-

XX MARK:NO MOUNT

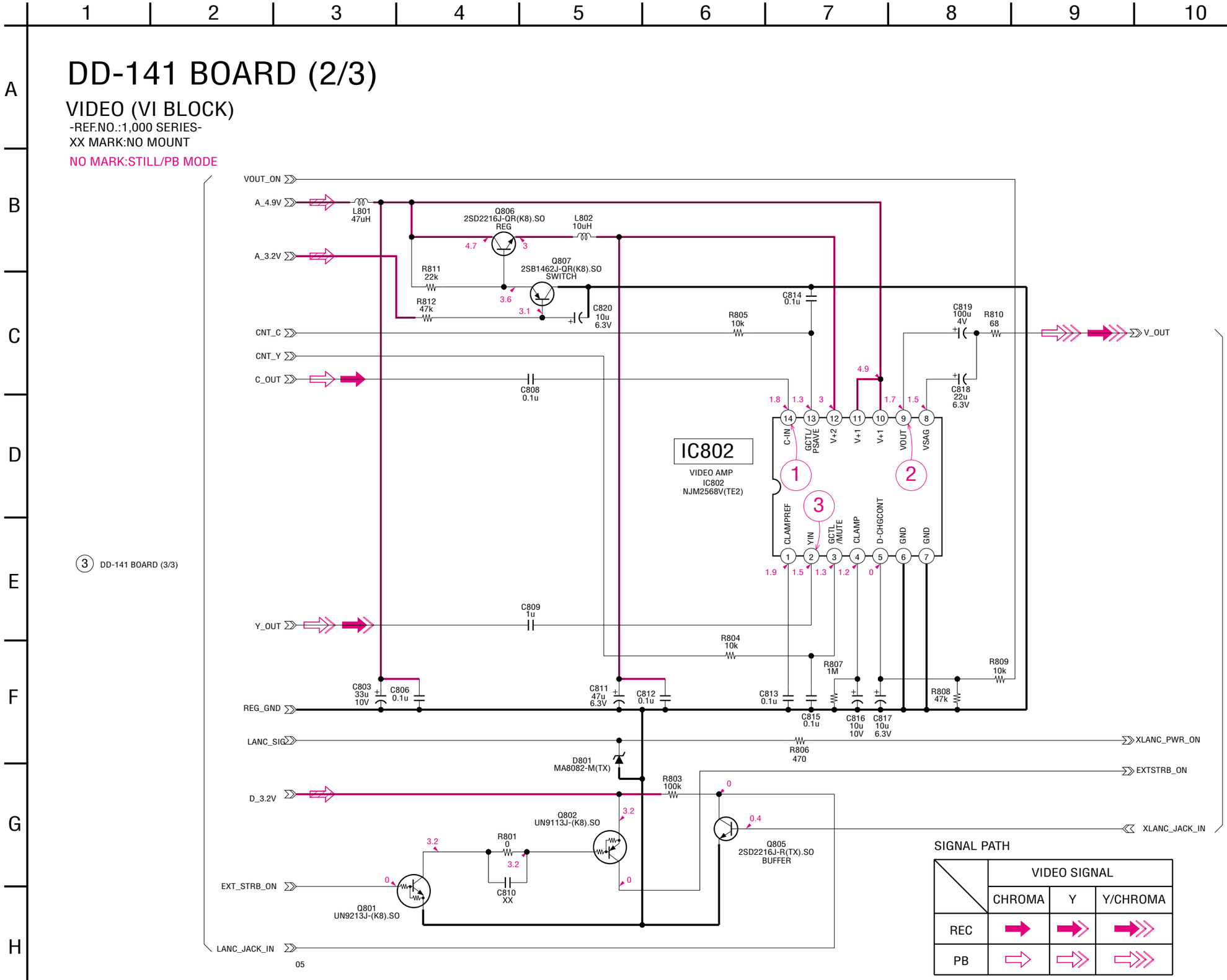


DD-141 (VIDEO) SCHEMATIC DIAGRAM • See page 4-41 for DD-141 printed wiring board. • See page 4-49 for waveforms.

DD-141 BOARD (2/3)

VIDEO (VI BLOCK)

-REF.NO.:1,000 SERIES-
XX MARK:NO MOUNT
NO MARK:STILL/PB MODE



SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	→	⇒	⇛
PB	▷	⇨	⇛

DD-141 (USB) SCHEMATIC DIAGRAM • See page 4-41 for DD-141 printed wiring board.

DD-141 BOARD (3/3)

USB

-REF.NO.:1,000 SERIES-
XX MARK:NO MOUNT
NO MARK:STILL/PB MODE

IC851
USB I/F

Q851
UN9113J-(K8).SO
SWITCH

IC851
PDIUSBP11APW,118

MODE, OE#, RCV, VP, VM, SUSPND, GND
VCC, VMO/FSEO, VPO, USB_D+, USB_D-, SPEED, (NC)

USB_D+PULLUP
USB_TXENL
USB_XVDATA
USB_D+IN
USB_D-IN
USB_SUSPND

R851 XX
R852 XX
R853 1500
FB851
C851 0.1u
C853 22u 6.3V

A_3.2V
REG_GND
D_3.2V
D_1.8V

R854 2200
C852 10u 6.3V
R855 100k
Q852 UN9216J-(K8).SO
Q853 UN9113J-(K8).SO
Q852,853 AU MUTE

R856 24
R857 24
C856 0.1u
C855 0.1u
C854 0.1u
C857 XX
C858 XX

CN851 16P

16	REG_GND		
15	D-		
14	D+		
13	REG_GND		
12	USB_DET		
11	REG_GND		
10	EXT_STRB_ON		
9	LANC_SIG		
8	REG_GND		
7	XLANC_JACK_IN		
6	LANC_DC		
5	AV_JACK_IN		
4	V_OUT		
3	REG_GND		
2	A_OUT		
1	REG_GND		

SL-56 BOARD CN251 (THROUGH THE FP-028 FLEXIBLE) (SEE PAGE 4-39)

XLANC_PWR_ON
AV_JACK_IN
C_OUT
Y_OUT
CNT_Y
CNT_C
VOUT_ON
ST_UNREG
CAM_P_5V
BL_UNREG
FAST_CHARGE
INIT_CHARGE_ON

CN852 80P

1	REG_GND	REG_GND	2
3	REG_GND	REG_GND	4
5	AU_OUT	REG_GND	6
7	AU_GND	USB_D+OUT	8
9	XAU_LINE_MUTE	USB_D-OUT	10
11	REG_GND	REG_GND	12
13	C_OUT	USB_TXENL	14
15	REG_GND	USB_XVDATA	16
17	Y_OUT	REG_GND	18
19	REG_GND	USB_D+IN	20
21	CNT_Y	USB_D-IN	22
23	REG_GND	REG_GND	24
25	CNT_C	USB_SUSPND	26
27	VOUT_ON	USB_D+PULLUP	28
29	REG_GND	LNAC_JACK_IN	30
31	N.C.	EXT_STRB_ON	32
33	N.C.	USB_DET	34
35	REG_GND	AV_JACK_IN	36
37	A_3.2V	A_4.9V	38
39	A_3.2V	A_4.9V	40
41	D_1.8VS	D_1.8VP	42
43	D_1.8VS	D_1.8VP	44
45	D_3.2V	CAM_3.2V	46
47	D_3.2V	CAM_3.2V	48
49	D_3.2V	CAM_-7.5V	50
51	ST_UNREG	CAM_15V	52
53	ST_UNREG	PANEL_3.2V	54
55	CAM_P_5V	PANEL_4.9V	56
57	CAM_P_5V	PANEL_6.5V	58
59	SP_5V	PANEL_13.2V	60
61	SP_5V	PANEL_-15V	62
63	BL_UNREG	BATT_UNREG	64
65	BL_UNREG	N.C.	66
67	N.C.	LCD_DD_ON	68
69	FAST_CHARGE	SYS_DD_ON	70
71	INIT_CHARGE_ON	REG_GND	72
73	LANC_DC	LANC_SIG	74
75	XLANC_PWR_ON	REG_GND	76
77	REG_GND	REG_GND	78
79	REG_GND	REG_GND	80

SY-58 BOARD (7/8) CN711 (SEE PAGE 4-27)

③ DD-141 BOARD (2/3)
① DD-141 BOARD (1/3)
④ DD-141 BOARD (2/3)
③ DD-141 BOARD (2/3)
② DD-141 BOARD (1/3)
③ DD-141 BOARD (2/3)

05

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

4-3. WAVEFORMS

CD-282 BOARD

❶ 5.5 Vp-p, 56 usec — IC401 ⑬, ⑳

❷ 4.2 Vp-p, 56 usec — IC401 ⑭, ⑲

❸ 7.4 Vp-p, 125 µsec — IC401 ①, ②, ③

❹ 7.4 Vp-p, 125 µsec — IC401 ④, ⑤, ⑥

❺ 1.4 Vp-p, 125 µsec — IC401 ⑩

PD-128 BOARD

❶ 1.7 Vp-p, 2H — IC802 ㊶

❷ 4.5 Vp-p, H — IC802 ㉔

❸ 4.5 Vp-p, H — IC802 ㉒

❹ 4.5 Vp-p, H — IC802 ⑳

❺ 4.8 Vp-p, H — IC802 ⑭

❻ 0.26 Vp-p, H — IC802 ⑩

❿ 3.2 Vp-p, H — IC901 ㊲

⓫ 4.1 Vp-p, 11.722 MHz — IC901 ㉖

⓬ 4.8 Vp-p, H — IC901 ②

⓭ 4.8 Vp-p, H — IC901 ③

⓮ 4.8 Vp-p, H — IC901 ④

DD-141 BOARD

❶ 0.5 Vp-p, H — IC802 ⑭

❷ 2 Vp-p, H — IC802 ⑨

❸ 0.5 Vp-p, H — IC802 ②

❼ 0.4 Vp-p, H — IC802 ⑨

❽ 0.5 Vp-p, H — IC802 ⑧

❾ 4.8 Vp-p, 2H — IC902 ⑦

4-4. PARTS LOCATION

SL-56 BOARD (SIDE A)

C255 A-2

D257 D-1
D259 D-1
D264 A-2
D265 C-2
D301 E-2
D302 E-2
D303 E-2

FB251 D-1
FB253 D-1
FB254 C-2

R152 D-7
R153 D-4
R155 C-7
R158 D-3
R159 D-7
R160 D-3
R161 D-7
R162 D-2
R163 D-6
R164 D-2
R252 A-2
R253 D-1
R256 D-1
R263 D-1
R301 D-2
R302 D-2
R303 D-2

S151 C-7
S152 E-5
S153 D-7
S154 D-3
S155 D-6
S156 D-1
S157 D-5
S158 E-3

SL-56 BOARD (SIDE B)

BT151 D-2

C151 D-3
C251 C-1
C252 A-2
C253 D-1
C301 C-7

CN151 E-2
CN251 A-1
CN252 C-1
CN301 D-7
CN302 E-5

D151 D-3
D152 D-3
D153 E-3
D154 D-3
D251 B-1
D253 B-1
D255 C-1
D256 A-2
D260 D-1
D261 A-1
D262 A-1
D263 A-1
D266 D-1

FB252 D-1
FB255 D-1
FB301 D-6

IC301 C-7

J251 B-1
J252 C-1

LF001 A-2
LF002 B-2
LF003 C-2
LF004 C-2

R251 C-1
R262 C-1
R264 B-2
R304 C-7
R305 D-6
R306 D-6

DD-141 BOARD (SIDE A)

C009 B-2
C010 A-1
C013 A-2
C019 A-1
C020 A-2
C034 A-3
C035 A-4
C036 B-2
C037 A-3
C039 B-4
C043 A-3
C044 A-2
C054 A-2
C803 A-4
C809 B-5
C811 B-4
C817 A-5
C818 A-5
C819 B-5
C820 A-4
C852 B-5
C855 B-5

CN852 B-3

D001 A-3
D002 A-3
D801 A-5

L001 B-3
L002 A-3
L003 B-4
L004 B-3
L006 A-4
L008 B-4
L010 A-4
L011 B-2
L013 A-2
L014 B-4
L801 B-4
L802 A-5

Q005 A-1
Q006 A-2
Q007 A-2
Q008 A-1
Q016 B-4
Q801 B-5
Q802 B-5
Q805 B-5
Q806 A-5
Q807 A-4
Q851 A-5
Q852 B-5
Q853 B-5

R006 A-1
R007 A-1
R009 A-1
R010 A-1
R011 A-1
R014 A-1
R015 B-1
R016 B-1
R017 A-1
R018 B-5
R019 A-1
R020 A-1
R021 A-1
R022 A-1
R023 A-1
R027 A-1
R028 B-1
R029 B-1
R030 B-1
R031 B-1
R032 A-1
R033 A-1
R034 A-1
R039 A-1
R040 A-1
R042 A-2
R043 A-1
R044 A-2
R045 A-2
R054 A-2
R801 B-5
R803 B-5
R806 B-5
R808 A-5
R809 A-5
R810 B-5
R811 A-5
R812 A-4
R853 A-5
R854 B-5
R855 B-5

T001 A-3

DD-141 BOARD (SIDE B)

C001 B-5
C002 B-5
C003 B-5
C004 A-5
C005 A-5
C007 B-5
C008 A-5
C014 B-5
C015 A-5
C016 A-4
C017 B-5
C018 A-5
C021 B-5
C022 A-5
C023 B-5
C024 B-4
C025 B-4
C026 A-5
C027 B-3
C028 A-3
C029 B-2
C030 A-3
C031 A-3
C032 B-3
C033 A-3
C038 A-3
C042 A-2
C046 A-2
C047 A-2
C048 A-3
C049 B-3
C050 A-4
C051 B-3
C052 A-4
C053 A-4
C055 A-4
C806 A-2
C808 A-2
C812 A-2
C813 A-1
C814 A-2
C815 A-1
C816 A-1
C851 B-2
C853 B-2
C854 A-1
C856 B-1

CN001 B-4
CN851 A-1

D003 B-3
D004 B-3

FB851 B-2

IC001 B-5
IC802 A-1
IC851 B-2

L005 A-3
L009 A-3
L012 A-2

Q001 B-3
Q002 B-2
Q003 B-3
Q004 B-2
Q009 A-3
Q013 A-4
Q014 A-2
Q017 A-2
Q018 A-2
Q019 A-4
Q020 B-4
Q021 A-4
Q022 A-3
Q023 B-4
Q024 A-4
Q025 A-3
Q026 B-4
Q027 A-4
Q028 A-3
Q029 B-4
Q030 A-4
Q031 A-4
Q032 A-3
Q033 A-4

R001 B-5
R002 A-4
R004 A-5
R005 B-5
R008 B-5
R012 B-5
R013 A-5
R024 B-5
R025 B-5
R026 A-5
R035 B-5
R036 B-4
R037 B-4
R038 A-4
R046 A-4
R047 B-4
R048 B-4
R049 A-4
R050 B-3
R051 B-4
R052 A-2
R053 A-2
R055 B-4
R056 A-4
R057 A-4
R058 A-2
R059 A-2
R060 A-4
R061 A-4
R062 B-4
R063 A-4
R064 A-3
R065 B-4
R066 A-4
R067 A-3
R068 A-4
R069 B-4
R070 A-3
R071 B-4
R072 B-4
R073 B-4
R074 A-4
R075 A-4
R076 A-4
R078 A-4
R081 B-4
R804 A-1
R805 A-4
R807 A-1
R856 B-1
R857 B-1

SECTION 5
ADJUSTMENTS

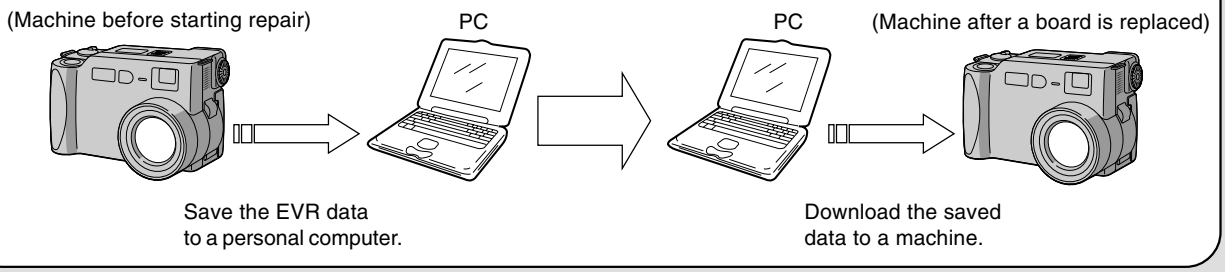
Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

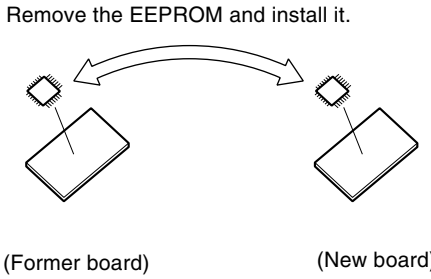
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



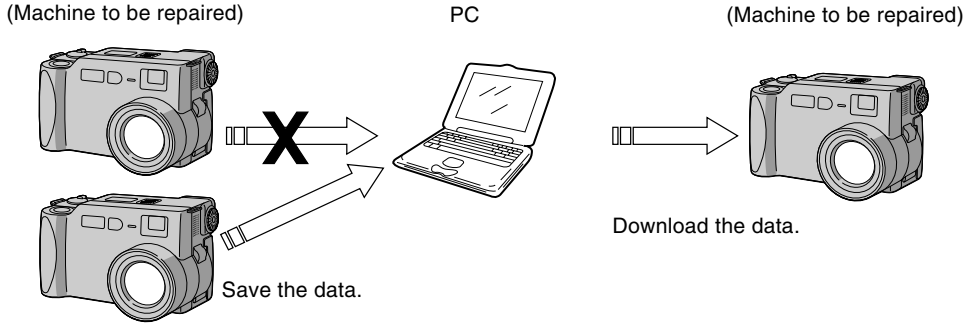
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 5-2 for the items to be checked.)

1-1. Adjusting items when replacing main parts and boards

When replacing main parts and boards, adjust the items indicated by ● in the following table.

Adjustment section	Adjustment	Replaced parts																	
		Block replacement				Mounted parts replacement							Board replacement						
		Lens device	Strobe unit	LCD block (LCD panel) LCD901	LCD block (Back light unit) ND901	CD-282 board (CCD imager) IC401	SY-58 board (S/H, AGC, A/D) IC102	SY-58 board (EVR) IC186	DD-141 board (VIDEO AMP) IC802	PD-128 board (RGB decoder) IC802	PD-128 board (Timing generator) IC901	PD-128 board (EVR) IC801	PD-128 board (COMPLETE)	CD-282 board (COMPLETE)	DD-141 board (COMPLETE)	SY-58 board (COMPLETE)	SY-58 board EEPROM IC406	SY-58 board EEPROM IC507
Initialization of 7, B, D, E, F, page data	Initialization of D page data															●	●	
	Initialization of 7, B, E, F page data															●		●
Video	Video sync level adj.							●	●						●	●		●
	Video burst level adj.							●	●						●	●		●
Camera	Flange back adj.	●				●								●		●		●
	F No. standard data input	●				●								●		●		●
	Mechanical shutter adjustment	●				●								●		●		●
	Light level adj.	●				●	●							●		●		●
	Mixed color cancel adj.	●				●	●							●		●		●
	Auto white balance standard data input					●	●							●		●		●
	Auto white balance adj.					●	●							●		●		●
	Color reproduction adj.					●	●							●		●		●
	Strobe white balance adj.		●			●	●	●						●		●		●
	CCD (black and white) defect compensation					●								●		●		●
LCD	LCD initial data input															●	●	
	VCO adj.										●	●	●			●	●	
	D range adj.									●		●	●			●	●	
	Bright adj.									●		●	●			●	●	
	Contrast adj.									●		●	●			●	●	
	Color adj.									●		●	●			●	●	
	V-COM level adj.									●		●	●			●	●	
	V-COM adj.			●						●		●	●			●	●	
	White balance adj.			●	●					●		●	●			●	●	
System control	Battery down adj.															●	●	

Table 5-1-1

5-1. CAMERA SECTION ADJUSTMENT

1-1. PREPARATIONS BEFORE ADJUSTMENT

1-1-1. List of Service Tools

- Oscilloscope
- Color monitor
- Vectorscope
- Regulated power supply
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	Pattern box PTB-450	J-6082-200-A	
J-3	Color chart for pattern box	J-6020-250-A	
J-4	Adjustment remote commander (RM-95 upgraded). (Note 1)	J-6082-053-B	
J-5	Siemens star chart	J-6080-875-A	For checking the flange back
J-6	Clear chart for pattern box	J-6080-621-A	
J-7	CPC-9 jig (Note 2)	J-6082-393-C	For connecting the adjustment remote commander For adjusting the LCD block
J-8	Mini pattern box	J-6082-353-B	For adjusting the flange back
J-9	Extension cable (16P, 0.5mm, L=100mm)	J-6082-357-A	For extension between the DD-141 board (CN851) and the SL-56 board (CN251)
	Extension cable (16P, 0.5mm, L=200mm)	J-6082-398-A	
J-10	Extension cable (18P, 0.5mm)	J-6082-423-A	For extension between the CD-282 board (CN401) and the SY-58 board (CN101)
J-11	Back ground paper	J-2501-130-A	For adjusting the strobe

Note 1: If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), The pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The old CPC-9 jig (Parts code: J-6082-393-B) cannot be used, because it cannot operate the adjustment remote commander.

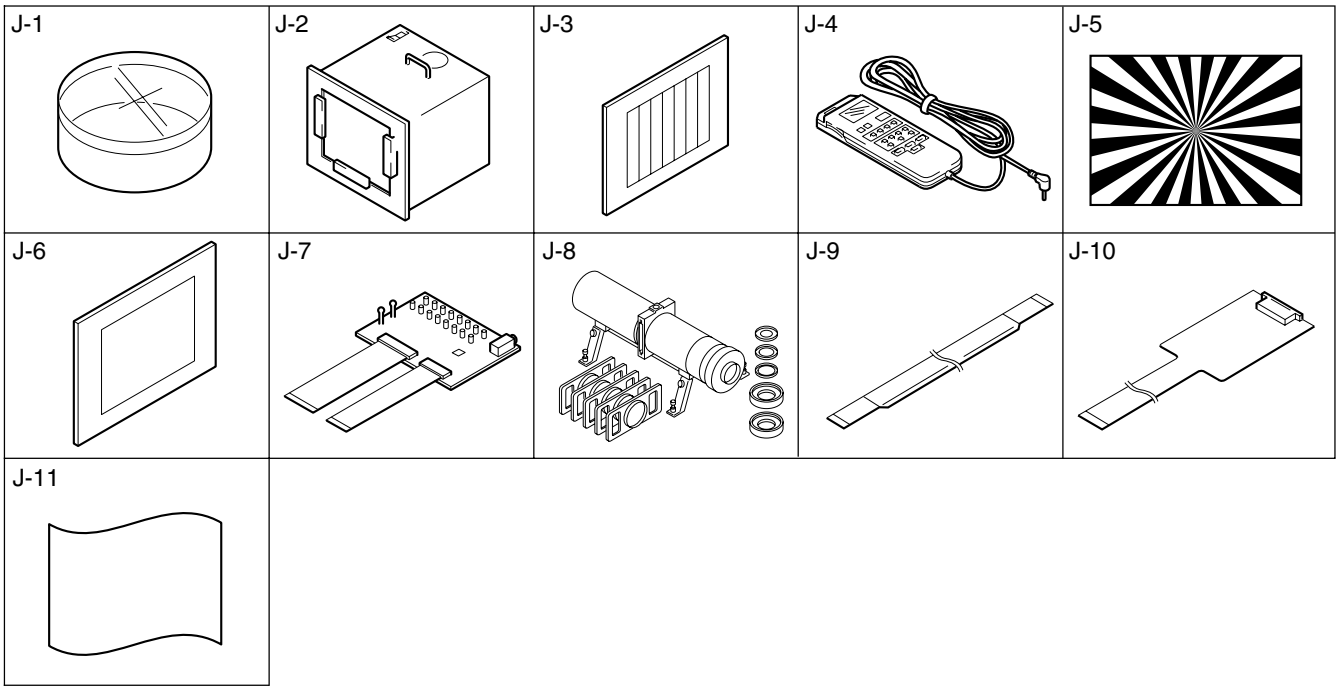


Fig. 5-1-1

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassemble.

1) Connect the equipment for adjustments according to Fig. 5-1-5.
2) Connect the Adjusting remote commander to SY-58 board CN709 via CPC-9 jig (J-6082-393-C). (See Fig. 5-1-3)

Note 3: Setting the "Forced STILL mode power ON" Mode
   1) Select page: 0, address: 01, and set data: 01.
   2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The Above procedure will enable the camera power to the turned on. After completing adjustments, be sure to exit the "Forced STILL mode power ON Mode".

Note 4: Exiting the "Forced STILL mode power ON Mode"
   1) Select page: 0, address: 01, and set data: 01.
   2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
   3) Select page: 0, address: 01, and set data: 00.

1-1-3. Discharging of the flashlight power supply

The capacitor which is used as power supply of flashlight is charged with 200 V to 300 V voltage. Discharge this voltage before starting adjustments in order to protect service engineers from electric shock during adjustment.

Discharge procedure

1. Press the FLASH button (SL-56 board S154) and turn off the FLASH LED (SL-56 board D301).
2. Fabricate the discharging jig as shown in Fig. 5-1-4 locally by yourself. Connect the discharging jig to the positive (+) and negative (–) terminal of the flash voltage charge capacitor. Allow ten seconds to discharge the voltage.

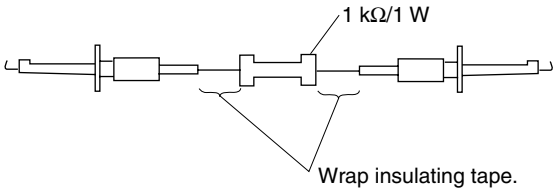


Fig. 5-1-4

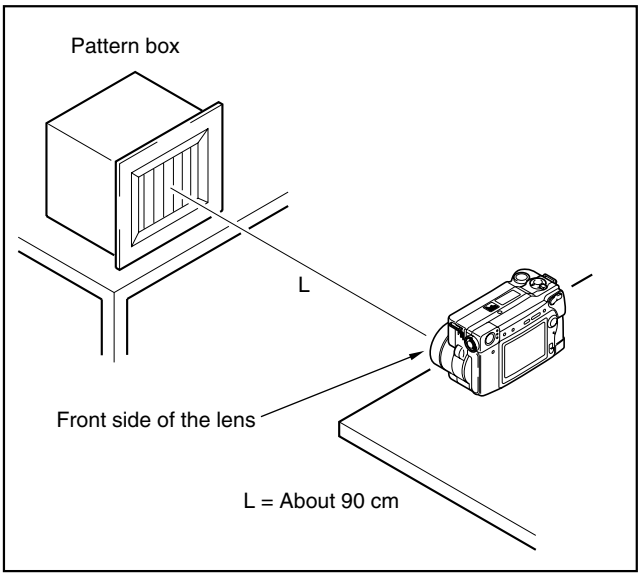
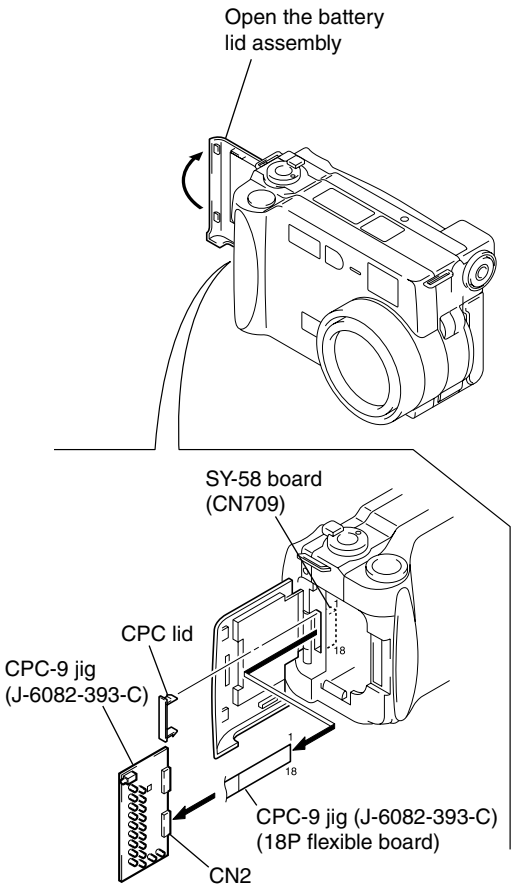
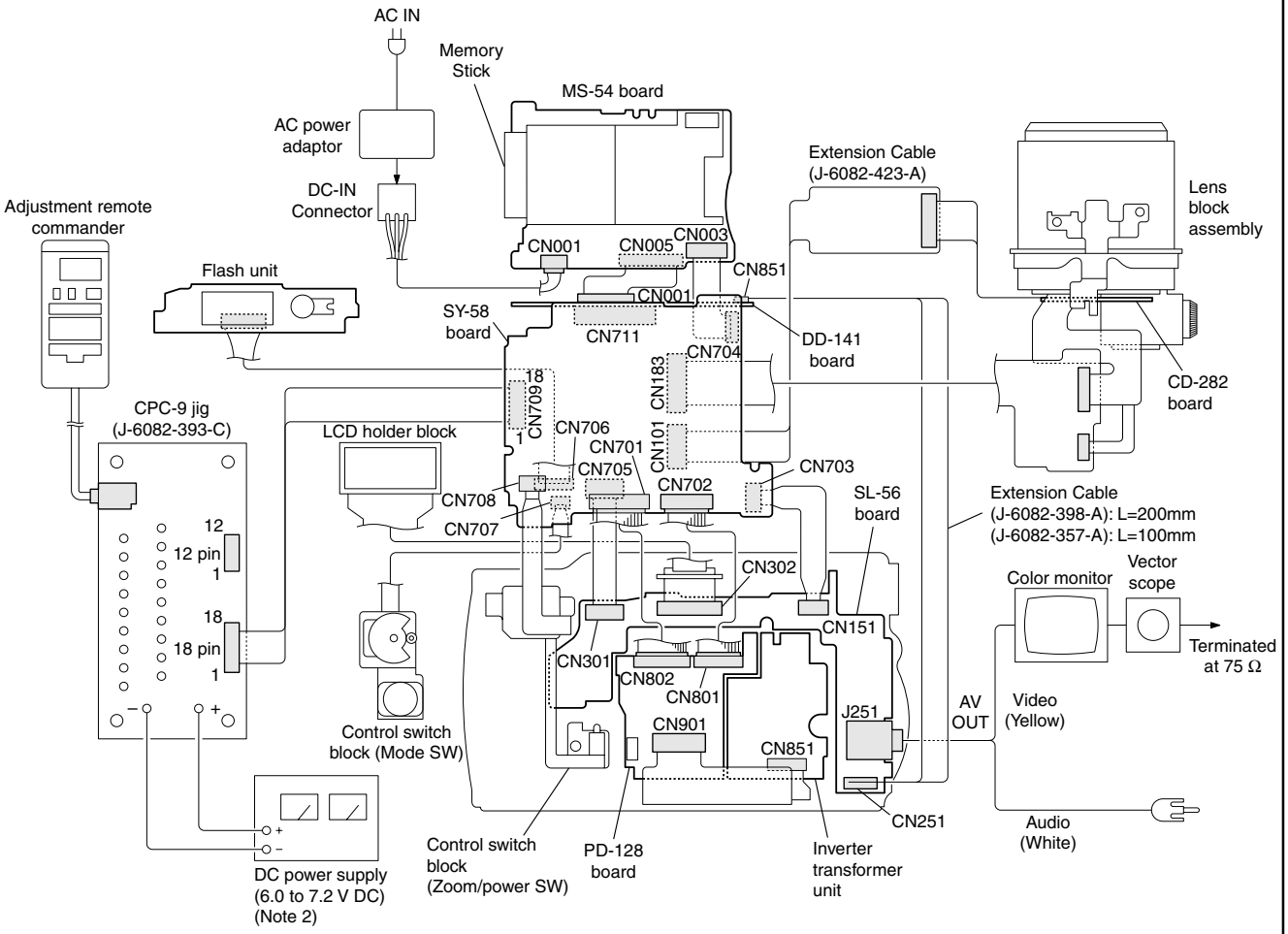


Fig. 5-1-2



Note 1: Don't use the 12 pin flexible board of CPC-9 jig. It causes damage to the unit.
Note 2: In removing the CPC lid, start from the upper side.
Note 3: The old CPC-9 jig (Parts code: J-6082-393-B) cannot be used, because it cannot operate the adjustment remote commander.

Fig. 5-1-3



Note 1: In changing data, wait for more than 5 seconds after the set was turned on, then change the data.
Note 2: Must be connected when performing the battery down adjustment.
Note 3: Don't use the 12 pin flexible board of CPC-9 jig. It causes damage to the unit.
Note 4: The old CPC-9 jig (Parts code: J-6082-393-B) cannot be used, because it cannot operate the adjustment remote commander.

Fig. 5-1-5

1-1-4. Precautions

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments.

1. FOCUS button (SL-56 board S156) ..... MANUAL
2. PROGRAM AE button (SL-56 board S152) ..... AUTO (No mark indicated on LCD)
3. DISPLAY button (SL-56 board S153) ..... OSD OFF
4. P. EFECT (Menu display) ..... OFF
5. DEMO (Menu display) ..... OFF
6. VIDEO OUT (Menu display) ..... NTSC
7. WHITE BALANCE (Menu display) ..... AUTO
8. EXPOSURE 0EV
9. FLASH LEVEL ..... NORMAL

2. Order of Adjustments

Basically carry out adjustments in the order given.

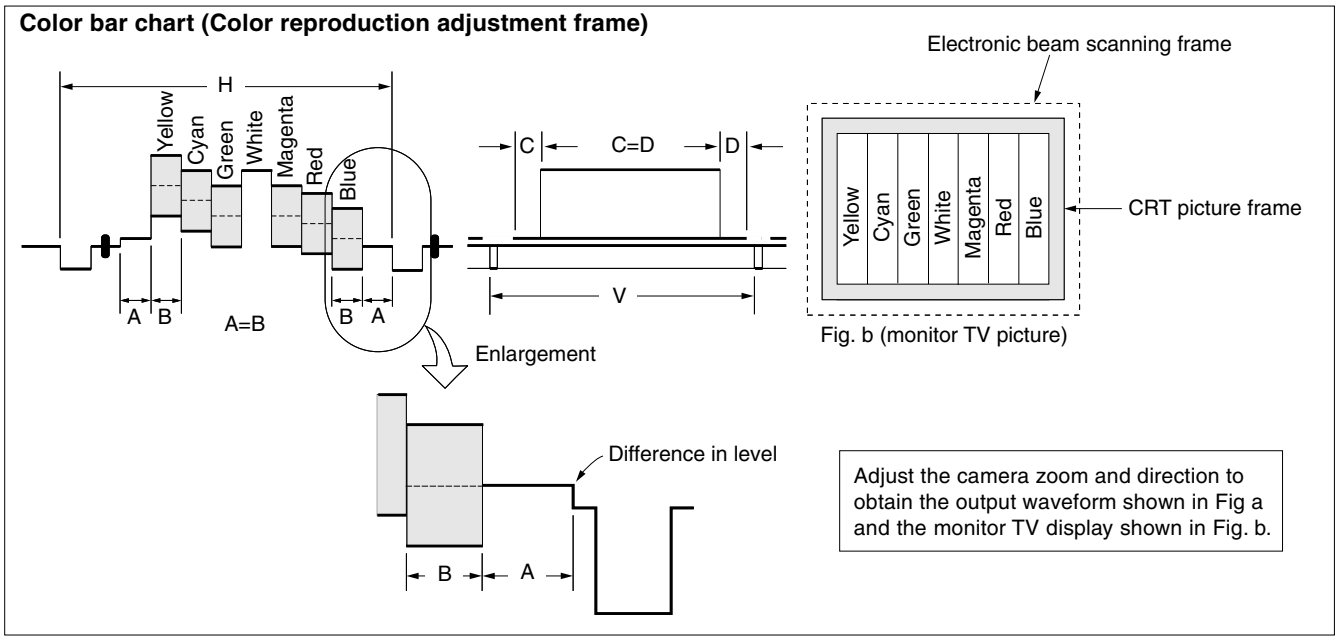


Fig. 5-1-6

3. Subjects

1) Color bar chart (Standard picture frame).
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 5-1-6. (Standard picture frame)
2) Clear chart (Standard picture frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time)

4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate flash adjustment. If it is not available, prepare the flash adjustment box as given below;

1) Provide woody board A, B and C of 15 mm thickness.

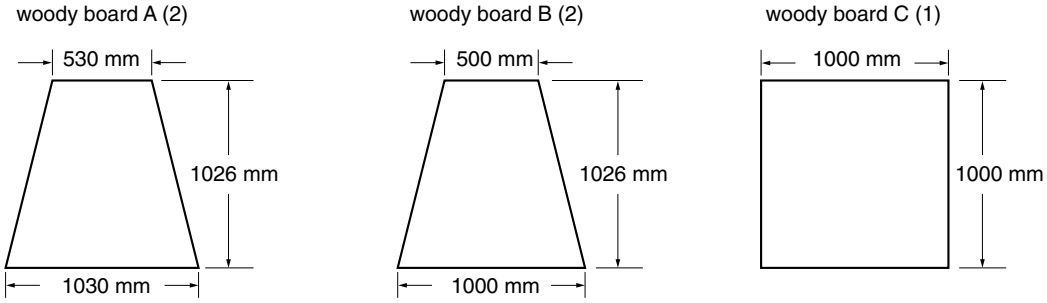


Fig. 5-1-8

2) Apply black mat paint to one side of woody board A and B.
3) Attach background paper (J-2501-130-A) to woody board C.
4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig 5-1-9)

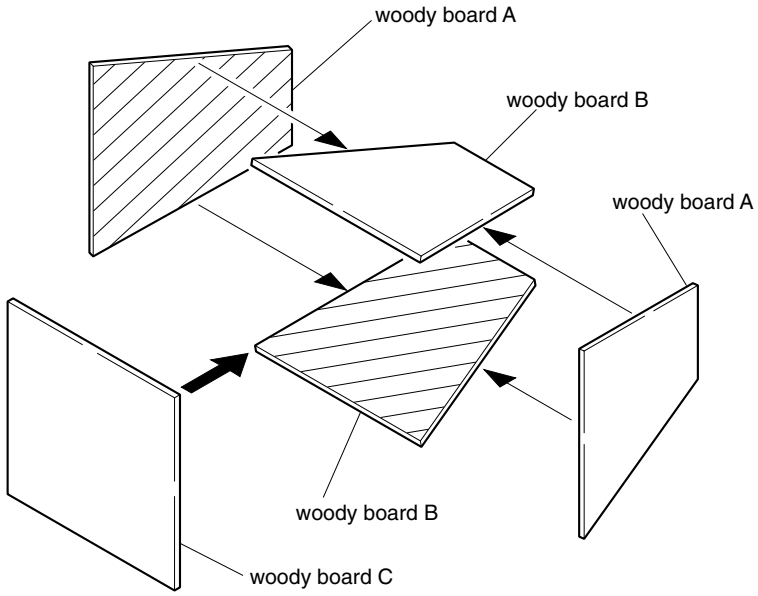


Fig. 5-1-9

1-2. INITIALIZATION OF B, D, E, F, 7 PAGE DATA

1-2-1. INITIALIZATION OF D PAGE DATA

1. Initializing the D Page Data

Note: If the D page data has been initialized, the following adjustments need to be performed again.
1) Modification of D page data
2) LCD system adjustments
3) Battery end adjustments

Adjusting page	D
Adjusting Address	10 to EF

Initializing Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 03, and set data: 00.
3) Select page: 2, address: 00, and set data: 2D.
4) Select page: 2, address: 01, set data: 2D, and press the PAUSE button of the adjustment remote commander.
5) Select page: 2, address: 02, and check that the data changes to "01".
6) Perform "Modification of D Page Data".

2. Modification of D Page Data

If the D page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note : If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of D Page data

1) Select page: 2, address: 00, and set data: 29.
2) Select page: 2, address: 01, and set data: 29, and press the PAUSE button of the adjustment remote commander.

3. D Page table

Note 1: Fixed data-1: Initialized data.
(Refer to "1. Initializing the D Page Data")

Note 2: Fixed data-2: Modified data.
(Refer to "2. Modified of D Page Data")

Address	Initial value	Remark
00 to 0F		
10 to 40		Fixed data-1 (Initialized data)
41		Fixed data-2
42 to 5F		Fixed data-1 (Initialized data)
60		Fixed data-2
61		
62		
63		
64 to 8F		Fixed data-1 (Initialized data)
90	80	Battery down adj.
91	88	
92	AD	
93	C2	
94	CD	
95 to 97		Fixed data-1 (Initialized data)
98		Fixed data-2
99		
9A		
9B		
9C		
9D		
9E		
9C		
A0		
A1		
A2 to A4		Fixed data-1 (Initialized data)
A5		Fixed data-2
A6		
A7,A8		Fixed data-1 (Initialized data)
A9		Fixed data-2
AA to CF		Fixed data-1 (Initialized data)
D0	BC	Bright adj.
D1	80	Color adj.
D2	B9	White balance adj.
D3	B7	
D4	BE	Contrast adj.
D5	C8	D Range adj.
D6	7C	V-COM Level adj.
D7	80	VCO adj. (NTSC)
D8	74	V-COM adj.
D9 to DC		Fixed data-1 (Initialized data)
DD	88	VCO adj. (PAL)
DE		Fixed data-2
DF		
E0 to EF		Fixed data-1 (Initialized data)

1-2-2. Initializing the B, E, F, 7 Page Data

1. Initializing the B, E, F, 7 Page Data

Note: If the B, E, F Page data has been initialized, "Modification of B, E, F, 7 Page Data" and following adjustments need to be performed again.
1) Modification of B, E, F, 7 page data
2) Video system adjustments
3) Camera system adjustments

Adjusting page	F
Adjusting Address	10 to FF
Adjusting page	E
Adjusting Address	00 to FF
Adjusting page	B
Adjusting Address	00 to FF
Adjusting page	7
Adjusting Address	00 to AF

Initializing Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 6, address: 00, and set data: 2D.
3) Select page: 6, address: 01, set data: 2D, and press the PAUSE button of the adjustment remote commander.
4) Select page: 6, address: 02, and check that the data changes to "01".
5) Perform "Modification of B, E, F, 7 Page Data".

2. Modification of B, E, F, 7 Page Data

If the B, E, F, 7 Page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of B, E, F, 7 Page data

1) Select page: 2, address: 00, and set data: 29.
2) Select page: 2, address: 01, and set data: 29, and press the PAUSE button of the adjustment remote commander.

3. B Page table

Note 1: Fixed data-1: Initialized data.
(Refer to "1. Initializing the B, E, F, 7 Page Data")
Note 2: Fixed data-2: Modified data.
(Refer to "2. Modified of B, E, F, 7 Page Data")

Address	Initial value	Remark
00	Fixed data-2	
01 to FF	Fixed data-1 (Initialized data)	

4. E Page table

Note 1: Fixed data-1: Initialized data.
(Refer to "1. Initializing the B, E, F, 7 Page Data")
Note 2: Fixed data-2: Modified data.
(Refer to "2. Modified of B, E, F, 7 Page Data")

Address	Initial value	Remark
00 to FF	Fixed data-1 (Initialized data)	

5. F Page table

Note 1: Fixed data-1: Initialized data. (Refer to “1. Initializing the B, E, F, 7 Page Data”)
Note 2: Fixed data-2: Modified data. (Refer to “2. Modified of B, E, F, 7 Page Data”)

Address	Initial value	Remark
00 to 0F		
10 to13		Fixed data-1 (Initialized data)
14	36	Flange back adj.
15	48	
16	DA	
17	DF	
18	16	
19	00	
1A	00	
1B	00	
1C	00	
1D	00	
1E	00	
1F	00	
20	20	
21	20	
22	BA	
23	46	
24	0A	
25	00	
26	85	Light level adj.
27		Fixed data-1 (Initialized data)
28	94	Light level adj.
29	00	F No. standard data input
2A	00	
2B	00	
2C	00	
2D to 39		Fixed data-1 (Initialized data)
3A	2F	Auto white balance standard data input
3B	37	
3C	40	
3D	D0	
3E		Fixed data-1 (Initialized data)
3F	B5	Auto white balance adj.
40	43	
41	03	Color reproduction adj.
42	E9	
43	63	
44	83	
45	D5	
46	FE	
47	73	
48	45	
49 to 4C		Fixed data-1 (Initialized data)
4D	28	Strobe white balance adj.
4E	6E	
4F to 58		Fixed data-1 (Initialized data)
59	00	Auto white balance standard data input
5A	14	Mechanical shutter adj.
5B		Fixed data-1 (Initialized data)
5C	63	Color reproduction adj.
5D	83	
5E	03	
5F	E9	
60 to 63		Fixed data-1 (Initialized data)

Address	Initial value	Remark
64	10	Strobe white balance adj.
65	61	Video sync level adj.
66	61	Video burst level adj.
67, 68		Fixed data-1 (Initialized data)
69	00	Strobe white balance adj.
6A	C0	
6B	B4	
6C	10	Mechanical shutter adj.
6D	FD	
6E	0B	
6F	A6	
70	09	
71	B5	
72	08	
73	40	
74	07	
75	48	
76	33	
77	33	
78	33	
79	33	
7A	33	
7B	33	
7C	33	
7D	33	
7E	33	
7F	33	
80	00	Auto white balance adj.
81 to 87		Fixed data-1 (Initialized data)
88	00	Flange back adj.
89	00	
8A	00	
8B	00	
8C	00	
8D	00	
8E	00	
8F	00	
90	00	
91	00	
92	00	
93	00	
94	00	
95	00	
96	00	
97	00	
98	00	
99	00	
9A	00	
9B	00	
9C to 9F		Fixed data-1 (Initialized data)
A0	00	Mixed color cancel adj.
A1	00	
A2	00	
A3	00	
A4 to FF		Fixed data-1 (Initialized data)

6. 7 Page table

Note 1: Fixed data-1: Initialized data. (Refer to “1. Initializing the B, E, F, 7 Page Data”)
Note 2: Fixed data-2: Modified data. (Refer to “2. Modified of B, E, F, 7 Page Data”)

Address	Initial value	Remark
00 to 5F	Fixed data-1 (Initialized data)	
60	0F	CCD black defect compensation
61	FF	
62	0F	
63	FF	
64	0F	
65	FF	
66	0F	
67	FF	
68	0F	
69	FF	
6A	0F	
6B	FF	
6C	0F	
6D	FF	
6E	0F	
6F	FF	
70	0F	
71	FF	
72	0F	
73	FF	
74	0F	
75	FF	
76	0F	
77	FF	
78	0F	
79	FF	
7A	0F	
7B	FF	
7C	0F	
7D	FF	
7E	0F	
7F	FF	
80	0F	
81	FF	
82	0F	
83	FF	
84	0F	
85	FF	
86	0F	
87	FF	
88	0F	CCD white defect compensation
89	FF	
8A	0F	
8B	FF	
8C	0F	
8D	FF	
8E	0F	
8F	FF	
90	0F	
91	FF	
92	0F	

Address	Initial value	Remark
93	FF	CCD white defect compensation
94	0F	
95	FF	
96	0F	
97	FF	
98	0F	
99	FF	
9A	0F	
9B	FF	
9C	0F	
9D	FF	
9E	0F	
9F	FF	
A0	0F	
A1	FF	
A2	0F	
A3	FF	
A4 to FF	Fixed data-1 (Initialized data)	

1-3. VIDEO SYSTEM ADJUSTMENTS

1. Video Sync Level Adjustment

Adjust the sync level of the composite video signal output

Mode	PLAY
Signal	Color bar (Test signal)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	65
Specified Value	A=286 ± 5 mV (NTSC) A=300 ± 5 mV (PAL)

Menu setting:

1) VIDEO OUT of SET UP menu
   ..... NTSC (NTSC mode)
   ..... PAL (PAL mode)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 04.
3) Select page: F, address: 65, change the data and set the sync level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

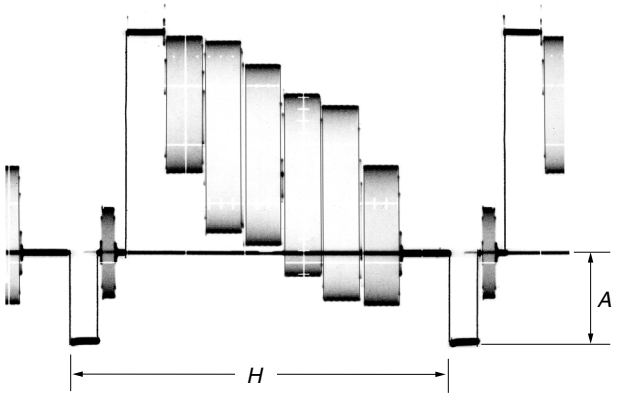


Fig. 5-1-10

2. Video Burst Level Adjustment

Adjust the burst level of the composite video signal output

Mode	PLAY
Signal	Color bar (Test signal)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	66
Specified Value	A=286 ± 5 mV (NTSC) A=300 ± 5 mV (PAL)

Menu setting:

1) VIDEO OUT of SET UP menu
   ..... NTSC (NTSC mode)
   ..... PAL (PAL mode)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 04.
3) Select page: F, address: 66, change the data and set the burst level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

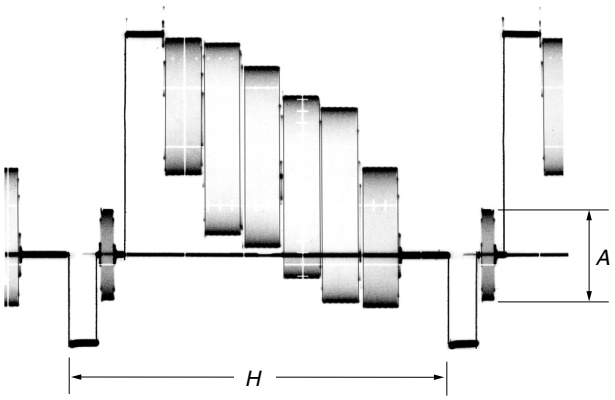


Fig. 5-1-11

1-4. CAMERA SYSTEM ADJUSTMENT

Before perform the camera system adjustments, check that the specified values of “VIDEO SYSTEM ADJUSTMENTS” are satisfied.

Data setting during camera system adjustment

Perform the following data setting before the camera system adjustments.

1) Select page: 0, address: 01, and set data: 01.
2) After writing down the original data of the following addresses, input the following data.

Page	Address	Data
E	43	10
E	8F	00
B	67	00

Note: Press the pause button of the adjusting remote commander each time to set data.

After completing the camera system adjustments, release the data setting:

1) Select page: 0, address: 01, and set data: 01.
2) Select the above address, and input the orignal data writen down at step 2).

   Note: Press the pause button of the adjusting remote commander each time to set data.
3) Select page: 0, address: 01, and set data: 00.

1. Flange Back Adjustment (Using the minipattern box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual forcusing.

Mode	STILL
Subject	Siemens star chart with ND filter for minipattern box (Note 1)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	14 to 25, 88 to 9B

Note 1: Dark Siemens star chart.
Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Preparations before adjustments:

The minipattern box is installed as shown in the following figure.
Note 3: The attachment lenses are not used.
Note 4: Take care not to hit the minipattern box when extending the lens.

Specified voltage: The specified voltage varies according to the minipatternbox, so adjustment the power sup ply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

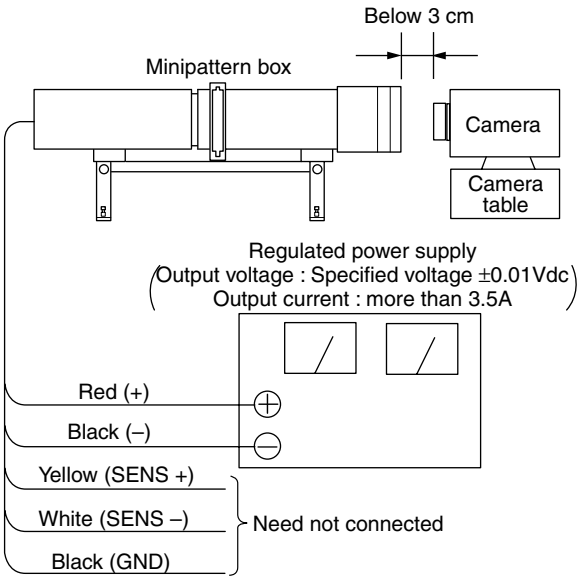


Fig. 5-1-12

Adjusting method:

1) Install the minipattern box so that the distance between it and the front of lens of the camera is less than 3cm.
2) Make the height of minipattern box and the camera equal.
3) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
4) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.
5) Select page: 0, address: 01, and set data: 01.
6) Select page: 5, address: F1, and set data: FF.
7) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
8) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
9) Check that the data on page: F, addresses: 14 to 25, 88 to 9B are initial values (See table below).

Address	Data	Address	Data	Address	Data
14	36	21	20	90	00
15	48	22	BA	91	00
16	DA	23	46	92	00
17	DF	24	0A	93	00
18	16	25	00	94	00
19	00	88	00	95	00
1A	00	89	00	96	00
1B	00	8A	00	97	00
1C	00	8B	00	98	00
1D	00	8C	00	99	00
1E	00	8D	00	9A	00
1F	00	8E	00	9B	00
20	20	8F	00		

10) Select page: 6, address: 01, set data: 13, and press the PAUSE button.
11) Select page: 6, address: 01, set data: 27, and press the PAUSE button. (The flange back adjustment is performed and the adjustment data is stored in page: F, address: 14 to 25, 88 to 9B)
12) Select page: 6, address: 02, and check that the data is "01".

Processing after completion of adjustment:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 5, address: F1, and set data: 00.
3) Select page: D, address: 63, set data: 00, and press the PAUSE button.
4) Release the data setting performed at step 8). (Refer to page 5-13)
5) Select page: 0, address: 01, and set data: 00.
6) Perform "Flange Back Check".

2. Flange Back Check

Mode	STILL
Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Specified value	Focused at the TELE end and WIDE end

Checking method:

1) Place the Siemens star 2.0 m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3) Select page: 0, address: 01, and set data: 01.
4) Select page: 5, address: F1, and set data: FF.
5) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
6) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
7) Shoot the Siemens star with the zoom TELE end.
8) Turn on the auto focus.
9) Check that the lens is focused.
10) Select page: 6, address: 2C, and set data: 01.
11) While observe the TV monitor, change the zoom to the WIDE end and check that the lens is focused.

Processing after completion of adjustment:

1) Select page: 6, address: 2C, and set data: 00.
2) Select page: 5, address: F1, and set data: 00.
3) Select page: D, address: 63, set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Release the data setting performed at step 6). (Refer to page 5-13)
5) Select page: 0, address: 01, and set data: 00.

3. F No. Standard Data Input

Compensate the unevenness of the iris meter sensitivity.

Mode	STILL
Subject	Clear chart (10 cm from the front of the lens)
Adjustment Page	F
Adjustment Address	29 to 2C

Note 1: Check that the data of page: 6, address: 02 is “00”.
If not, turn the power of unit OFF/ON.

Adjusting method:

1) Shoot the Clear chart with the zoom WIDE end.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 5, address: F1, and set data: FF.
4) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
5) Perform “ Data setting during camera system adjustment”. (Refer to page 5-13)
6) Select page: 6, address: 01, set data: BB, and press the PAUSE button.
7) (The F No. standard data input is performed and the standard data is stored in page: F, address: 29 to 2C)
8) Select page: 6, address: 02, and check that the data is “01”.

Processing after Completing Adjustments:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 5, address: F1, and set data: 00.
3) Select page: D, address: 63, set data: 00, and press the PAUSE button.
4) Release the data setting performed at step 5). (Refer to page 5-13)
5) Select page: 0, address: 01, and set data: 00.

4. Mechanical Shutter Adjustment

Adjust the period which the mechanical shutter is closed, and compensate the exposure.

Mode	STILL
Subject	Clear chart (10 cm from the front of the lens)
Adjustment Page	F
Adjustment Address	5A, 6C to 7F

Note 1: Check that the data of page: 6, address: 02 is “00”.
If not, turn the power of unit OFF/ON.

Adjusting method:

1) Shoot the Clear chart with the zoom WIDE end.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 5, address: F1, and set data: FF.
4) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
5) Perform “ Data setting during camera system adjustment”. (Refer to page 5-13)
6) Select page: 6, address: 01, set data: AD, and press the PAUSE button. (The mechanical shutter adjustment is performed and the adjustment data is stored in page: F, address: 5A and 6C to 7F)
7) Select page: 6, address: 02, and check that the data is “01”.
8) Select page: 6, address: AB, and check that the data is “00”. (If the data other than “00”, mechanical shutter adjustment has errors)

Processing after Completing Adjustments:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 5, address: F1, and set data: 00.
3) Select page: D, address: 63, set data: 00, and press the PAUSE button.
4) Release the data setting performed at step 5). (Refer to page 5-13)
5) Select page: 0, address: 01, and set data: 00.

5. Picture Frame Setting

Mode	STILL
Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, E=F

Note 1: Displayed data of page 1 of adjusting remote commander.

1:XX:XX
- XL or YL data
- XH or YH data

Setting method:

1) Select page: 5, address: F1, and set data: FF.
2) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
3) Adjust the zoom and the camera direction, and set to the picture frame to the specified position.
4) Mark the position of the picture frame on the TV monitor, and adjust the picture frame to this position in following adjustments using "Color reproduction adjustment frame".
5) Select page: 0, address: 03, and set data: 18.
6) Select page: 1, and note down the XH and XL data. (Note 1)
7) Select page: 0, address: 03, and set data: 22.
8) Select page: 1, and note down the YH and YL data. (Note 1)
9) Release the data setting performed at step 2). (Refer to page 5-13)
10) Select page: 5, address: F1, and set data: 00.

How to reset the zoom and focus when they deviated:

If the zoom and focus deviated due to some reason, reset them in the following method.

1) Select page: 6, address: 90, and set data: XL. (Note 2)
2) Select page: 6, address: 91, and set data: XH. (Note 2)
3) Select page: 6, address: 92, and set data: YL. (Note 3)
4) Select page: 6, address: 93, and set data: YH. (Note 3)
5) Select page: 6, address: 01, set data: 79, press the PAUSE button, and wait for 1 second.
6) Select page: 6, address: 2C, and set data: 01.
7) Select page: 6, address: 01, set data: 00, and press the PAUSE button.

Note 2: The data noted down at step 6) of "Setting method".
Note 3: The data noted down at step 8) of "Setting method".

Check on the oscilloscope

1. Horizontal period

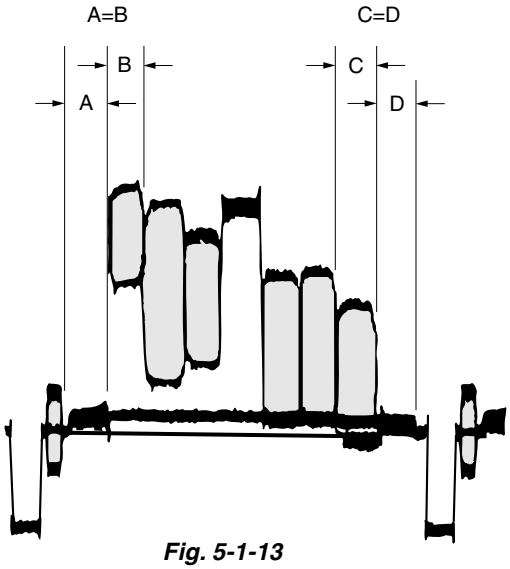


Fig. 5-1-13

2. Vertical period

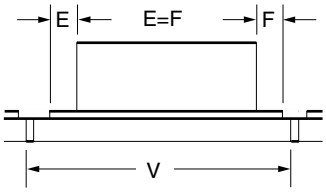


Fig. 5-1-14

Check on the TV monitor

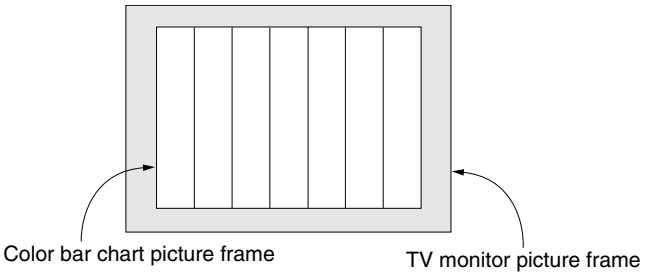


Fig. 5-1-15

6. Light Level Adjustment

Adjust the standard LV value.

Mode	STILL
Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Displayed data of page: 1 (Note 2)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	26, 28
Specified Value	AE level: 0FC0 to 1040

Note 1: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Note 2: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└——— Displayed data

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Select page: 6, address: 01, set data: 0D, and press the PAUSE button. (The light level adjustment is performed and the adjustment data is stored in page: F, address: 26 and 28)
6) Select page: 6, address: 02, and check that the data is "01".
7) Select page: 0, address: 03, and set data: 06.
8) Select page: 1, and check that the displayed data (Note 2) satisfies the AE level specified value.

Processing after Completing Adjustments:

1) Select page: 0, address: 03, and set data: 00.
2) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 5, address: F1, and set data: 00.
4) Select page: D, address: 63, set data: 00, and press the PAUSE button.
5) Release the data setting performed at step 4). (Refer to page 5-13)
6) Select page: 0, address: 01, and set data: 00.

7. Mixed Color Cancel Adjustment

To perform mixed color cancel adjustment based on data of each color in color bar.

Mode	STILL
Subject	Color bar chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	A0 to A3

Note 1: Perform "Light Level Adjustment" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Select page: 6, address: 01, set data: D7, and press the PAUSE button.
6) Select page: 6, address: 01, set data: D5, and press the PAUSE button. (The mixed color adjustment is performed and the adjustment data is stored in page: F, address: A0 to A3)
7) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 5, address: F1, and set data: 00.
3) Select page: D, address: 63, set data: 00, and press the PAUSE button.
4) Release the data setting performed at step 4). (Refer to page 5-13)
5) Select page: 0, address: 01, and set data: 00.

8. Auto White Balance Standard Data Input

Adjust the white balance standard data at 3200K.

Mode	STILL
Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	3A to 3D, 59

Note 1: Perform "Light Level Adjustment" and "Mixed Color Cancel Adjustment" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Select page: 6, address: 01, set data: 11, and press the PAUSE button.
6) Select page: 6, address: 01, set data: 0B, and press the PAUSE button. (The auto white balance standard data input is performed and the standard data is stored in page: F, address: 3A to 3D, 59)
7) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 5, address: F1, and set data: 00.
3) Select page: D, address: 63, set data: 00, and press the PAUSE button.
4) Release the data setting performed at step 4). (Refer to page 5-13)
5) Select page: 0, address: 01, and set data: 00.
6) Perform "Auto White Balance Adjustment".

9. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Mode	STILL
Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Displayed data of page: 1 (Note 3)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	3F, 40, 80
Specified Value	R ratio: 28E0 to 2A20 B ratio: 5D60 to 5EA0

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 5, address: F1, and set data: FF.
4) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
5) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
6) Select page: 6, address: 01, set data: A7, and press the PAUSE button.
7) Select page: F, address: 49 to 4C, and noting down the data of each address.
8) Write data in page: F, address: 49 to 4C as shown in the following table.

Adderss	49	4A	4B	4C
Data	29	80	5E	00

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

9) Select page: 6, address: 01, set data: A5, and press the PAUSE button. (The auto white balance adjustment is performed and the adjustment data is stored in page: F, address: 3F, 40 and 80)
10) Select page: 6, address: 02, and check that the data is "01".
11) Select page: 6, address: 01, set data: 3F, and press the PAUSE button.
12) Select page: 0, address: 03, and set data: 04.
13) Select page: 1, and check that the displayed data (Note 3) satisfies the R ratio specified value.
14) Select page: 0, address: 03, and set data: 05.
15) Select page: 1, and check that the displayed data (Note 3) satisfies the B ratio specified value.
16) Select page: F, address: 49 to 4C, and input the data noted down at step 9).

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 0, address: 03, and set data: 00.
2) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 5, address: F1, and set data: 00.
4) Select page: D, address: 63, set data: 00, and press the PAUSE button.
5) Release the data setting performed at step 5). (Refer to page 5-13)
6) Select page: 0, address: 01, and set data: 00.

10. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Mode	STILL
Subject	Color bar chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	41 to 48, 5C to 5F

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Select page: 6, address: 01, set data: AB, and press the PAUSE button.
6) Select page: 6, address: 12, set data: 80, and press the PAUSE button.
7) Wait for 1 second.
8) Select page: 6, address: 12, set data: 00, and press the PAUSE button.
9) Wait for 2 seconds.
10) Select page: 6, address: 01, set data: A9, and press the PAUSE button. (The color reproduction adjustment is performed and the adjustment data is stored in page: F, address: 41 to 48, 5C to 5F)
11) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 5, address: F1, and set data: 00.
3) Select page: D, address: 63, set data: 00, and press the PAUSE button.
4) Release the data setting performed at step 4). (Refer to page 5-13)
5) Select page: 0, address: 01, and set data: 00.
6) Perform "Color Reproduction Check".

11. Color Reproduction Check

Mode	STILL
Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Vectorscope
Specified Value	All color luminance points shouldsettle within each color reproduction frame.

Menu setting:

1) VIDEO OUT of SET UP menu
   ..... NTSC (NTSC mode)
   ..... PAL (PAL mode)

Checking method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Check that the picture frame is set to the specified position. (Refer to "6. picture Frame Setting")
6) Select page: 6, address: 10, and set data: 01.
7) Select page: E, address: 52, after noting down the data, set data: 0A, and press the PAUSE button.
8) Select page: 6, address: 01, set data: 0F, and press the PAUSE button.
9) Select page: 6, address: 12, set data: 80, and press the PAUSE button.
10) Wait for 1 second.
11) Select page: 6, address: 12, set data: 00, and press the PAUSE button.
12) Wait for 2 seconds.
13) Check the each color luminance point in each color reproduction frame.

Processing after Completing Adjustments:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 6, address: 10, and set data: 00.
3) Select page: E, address: 52, set data noted down at step 8) and press the PAUSE button.
4) Select page: 5, address: F1, and set data: 00.
5) Select page: D, address: 63, set data: 00, and press the PAUSE button.
6) Release the data setting performed at step 4). (Refer to page 5-13)
7) Select page: 0, address: 01, and set data: 00.

For NTSC mode

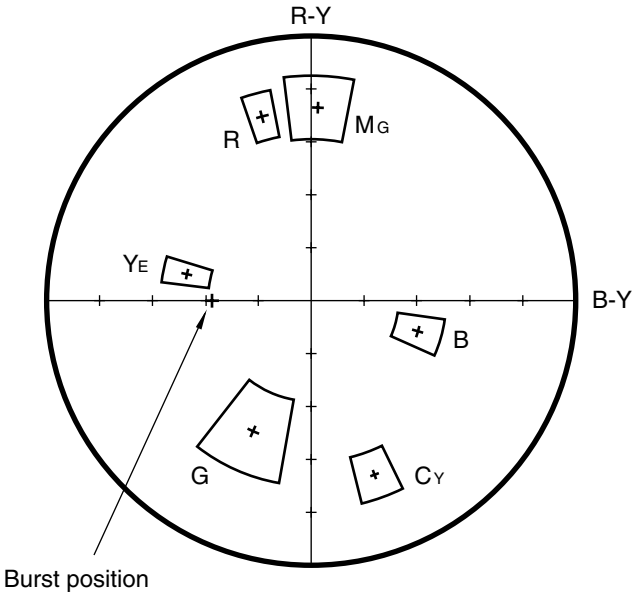


Fig. 5-1-16

For PAL mode

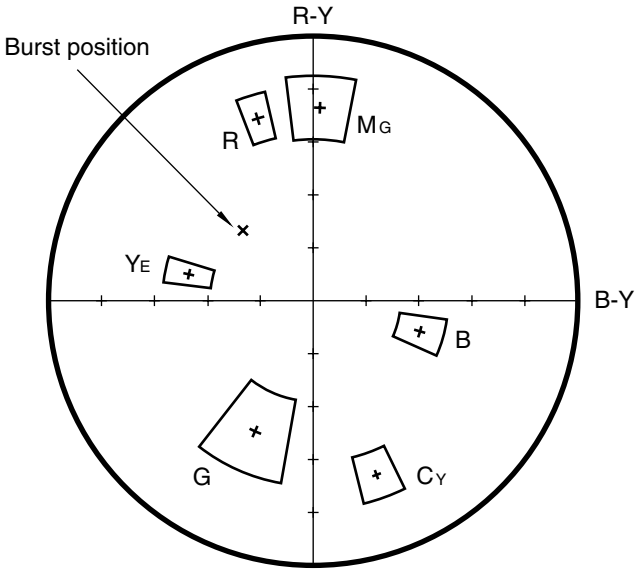


Fig. 5-1-17

12. White Balance Check

Mode	STILL	
Subject	Clear chart (Color reproduction adjustment frame)	
Measurement Point	Displayed data of Page: 1 (Note 2)	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Adjustment remote Commander	Vectorscope
Specified Value	R ratio: 3E00 to 4200 B ratio: 3E00 to 4200	Fig. 5-1-18 (A) and (B)

Note 1: Refer to "6. Picture Frame Setting" for XH, XL, YH and YL.

Note 2: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Checking method:

1) Check that the lens is not covered with either filter.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 5, address: F1, and set data: FF.
4) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
5) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
6) Select page: 6, address: 90, and set data: XL. (Note 1)
7) Select page: 6, address: 91, and set data: XH. (Note 1)
8) Select page: 6, address: 92, and set data: YL. (Note 1)
9) Select page: 6, address: 93, and set data: YH. (Note 1)
10) Select page: 6, address: 6C, and set data: 01.
11) Select page: 6, address: 01, set data: 79, press the PAUSE button, and wait for 1 second.
12) Select page: 6, address: 2C, and set data: 01.

• INDOOR data check

13) Select page: E, address: 52, after noting down the data, set data: 0E, and press the PAUSE button.
14) Select page: 6, address: 01, set data: 0F, and press the PAUSE button.
15) Select page: 0, address: 03, and set data: 04.
16) Select page: 1, and check that the displayed data (Note 2) satisfies the R ratio specified value.
17) Select page: 0, address: 03, and set data: 05.
18) Select page: 1, and check that the displayed data (Note 2) satisfies the B ratio specified value.

• INDOOR luminance point check

19) Select page: 6, address: 1C, and set data: 00.
20) Select page: 0, address: 03, and set data: 00.
21) Check that the center of the white luminance point is within the circle shown Fig. 5-1-18 (A).

• OUTDOOR luminance point check

22) Place the C14 filter on the lens.
23) Select page: E, address: 4B, after noting down the data, set data: 20, and press the PAUSE button.
24) Select page: 6, address: 01, set data: 3F, and press the PAUSE button.
25) Check that the center of the white luminance point settles in the circle shown Fig. 5-1-18 (B).

Processing after Completing Adjustments:

1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 6, adderss: 6C, and set data: 00.
3) Select page: E, address: 52, set data noted down at step 13) and press the PAUSE button.
4) Select page: E, address: 4B, set data noted down at step 23) and press the PAUSE button.
5) Select page: 5, address: F1, and set data: 00.
6) Select page: D, address: 63, set data: 00, and press the PAUSE button.
7) Release the data setting performed at step 5). (Refer to page 5-13)
8) Select page: 0, address: 01, and set data: 00.

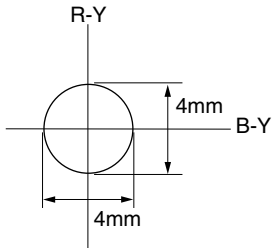


Fig. 5-1-18 (A)

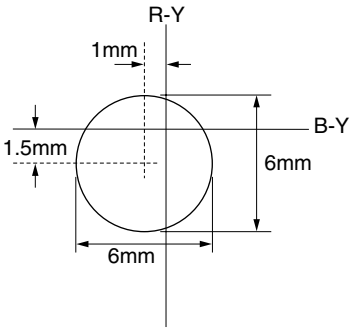


Fig. 5-1-18 (B)

13. Strobe White Balance Adjustment

Adjust the white balance when the strobe light flashed.

Mode	STILL
Subject	Flash adjustment box (Note 3) (1.0 m from the front of lens)
Adjustment Page	F
Adjustment Address	4D, 4E, 64, 69, 6A, 6B

Note 1: Perform "Flange Back Adjustment", "Light Level Adjustment", "Auto White Balance Adjustment" and "Auto White Balance Standard Data Input" before this adjustment.
Note 2: Perform this adjustment in the Flash adjustment box.
Note 3: Refer to "4. Preparing the Flash adjustment box". (See page 5-7)
Note 4: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Switch setting:

1) FLASH ..... ON

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Select page: 7, address: 03, and set data: 08.
6) Select page: 6, address: 90, and set data: 00.
7) Select page: 6, address: 91, and set data: 00.
8) Select page: 6, address: 92, and set data: 00.
9) Select page: 6, address: 93, and set data: 80.
10) Select page: 6, address: 6C, and set data: 01.
11) Select page: 6, address: 2C, and set data: 01.
12) Select page: 6, address: 01, set data: 79, and press the PAUSE button.
13) Select page: 6, address: 01, set data: 67, and press the PAUSE button.
14) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
15) Select page: 6, address: 01, set data: 79, and press the PAUSE button.
16) Select page: 6, address: 01, set data: 67, and press the PAUSE button.
17) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
18) Select page: 6, address: 01, set data: 79, and press the PAUSE button.
19) Select page: 6, address: 01, set data: B9, and press the PAUSE button. (The strobe white balance adjustment is performed and the adjustment data is stored in page: F, address: 4D, 4E, 64, 69, 6A and 6B)
20) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments:

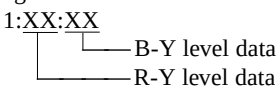
1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Perform "Strobe Light Level and White Balance Check" successively. (Do not turn the power of unit OFF)

14. Strobe Light Level and White balance Check

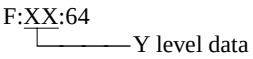
Check the light level regulation and the white balance when the strobe light flashed.

Mode	STILL
Subject	Flash adjustment box (Note 3) (1.0 m from the front of lens)
Measurement Point	Displayed data of page: 1
Measuring Instrument	Adjusting remote commander
Specified value	Y level data: 60 to 94 R-Y level data: FA to FF or 00 to 06 (Note 4) B-Y level data: FA to FF or 00 to 06 (Note 4)

Note 1: Perform this checking successively after performing "Flange Back Adjustment", " Light Level Adjustment", "Strobe White Balance Adjustment" and "Auto White Balance Standard Data Input". (Do not turn the power of unit OFF)
Note 2: Perform this adjustment in the Flash adjustment box.
Note 3: Refer to "4. Preparing the Fiash adjustment box". (See page 5-7)
Note 4: The right four digits of the page: 1 displayed data of the adjusting remote commander.



Note 5: Displayed data of page: F, address: 64 of the adjusting remote commander.



Note 6: Check that the data of page: 6, address: 02 is "00".

Checking method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 6, address: 01, set data: 79, and press the PAUSE button of the adjusting remote commander.
3) Select page: 6, address: 01, set data: 67, and press the PAUSE button.
4) Check the flashing of strobe light.
5) Select page: F, address: 64, and check that the data satisfies the Y level data specified value. (Note 5)
6) Select page: 0, address: 03, and set data: 02.
7) Select page: 1, and check the R-Y, B-Y level data (Note 4) satisfies the specified value.

Processing after Completing Adjustments:

1) Select page: 0, address: 03, and set data: 00.
2) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 6, address: 2C, and set data: 00.
4) Select page: 6, address: 6C, and set data: 00.
5) Select page: 6, address: 93, and set data: 00.
6) Select page: 7, address: 03, set data: 00, and press the PAUSE button.
7) Select page: 5, address: F1, and set data: 00.
8) Select page: D, address: 63, set data: 00, and press the PAUSE button.
9) Release the data setting performed at step 4) of "Strobe White Balance Adjustment". (Refer to page 5-13)
10) Select page: 0, address: 01, and set data: 00.

15. CCD Black Defect Compensation

Mode	STILL
Subject	Clear chart (25 cm from the front of lens)
Measurement Point	Displayed data of page: 6, address: 55
Measuring Instrument	Adjusting remote commander
Adjustment Page	7
Adjustment Address	60 to 87

Note 1: Check that there are no dust, no dirt and reflection of the clear chart.

Note 2: Any subject other than the clear chart should be in the screen.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Select page: F, address: DF, after noting down the data, set data: 4C, and press the PAUSE button.
6) Select page: 6, address: 2C, and set data: 01.
7) Select page: 6, address: 90, and set data: 00.
8) Select page: 6, address: 91, and set data: 03.
9) Select page: 6, address: 92, and set data: 00.
10) Select page: 6, address: 93, and set data: 00.
11) Select page: 6, address: 6C, and set data: 01.
12) Select page: 6, address: 01, set data: 79, and press the PAUSE button.
13) Select page: 6, address: 30, and set data: 01.
14) Wait 4 seconds.
15) Select page: 6, address: 01, set data: 8D, and press the PAUSE button. (The CCD black defect compensation is performed and the compensation data is stored in page: 7, address: 60 to 87)
16) Select page: 6, address: 02, and check that the data is "01".
17) Select page: 6, address: 55, and check the data.
    00 to 0A: Normal
    0B to FF: Defective
18) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
19) Select page: F, address: DF, set data: 5A, and press the PAUSE button.
20) Select page: 6, address: 01, set data: 89, and press the PAUSE button.
21) Select page: 6, address: 02, and check that the data is "01".
22) Select page: 6, address: 55, and check the data .
    00: Normal
    01 to FF: Defective

Processing after Completing Adjustments:

1) Select page: F, address: DF, set data noted down at step 5) and press the PAUSE button of the adjusting remote commander.
2) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
3) Select page: 6, address: 2C, and set data: 00.
4) Select page: 6, address: 30, and set data: 00.
5) Select page: 6, address: 6C, and set data: 00.
6) Select page: 6, address: 91, and set data: 00.
7) Select page: 5, address: F1, and set data: 00.
8) Select page: D, address: 63, set data: 00, and press the PAUSE button.
9) Release the data setting performed at step 4). (Refer to page 5-13)
10) Select page: 0, address: 01, and set data: 00.

16. CCD White Defect Compensation

Mode	STILL
Subject	Clear chart (25 cm from the front of lens)
Measurement Point	Displayed data of page: 6, address: 55
Measuring Instrument	Adjusting remote commander
Adjustment Page	7
Adjustment Address	88 to A3

Note 1: Check that there are no dust, no dirt and reflection of the clear chart.

Note 2: Any subject other than the clear chart should be in the screen.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: FF.
3) Select page: D, address: 63, set data: 40, and press the PAUSE button of the adjusting remote commander.
4) Perform " Data setting during camera system adjustment". (Refer to page 5-13)
5) Select page: F, address: DE, after noting down the data, set data: 1E, and press the PAUSE button.
6) Select page: F, address: E3, after noting down the data, set data: 08, and press the PAUSE button.
7) Select page: 6, address: 01, set data: 8B, and press the PAUSE button. (The CCD white defect compensation is performed and the compensation data is stored in page: 7, address: 88 to A3)
8) Select page: 6, address: 02, and check that the data is "01".
9) Select page: 6, address: 55, and check the data.
    00 to 7F: Normal
    80 to FF: Defective
10) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
11) Select page: F, address: DE, set data: 0F, and press the PAUSE button.
12) Select page: F, address: E3, set data: A0, and press the PAUSE button.
13) Select page: 6, address: 01, set data: 87, and press the PAUSE button.
14) Select page: 6, address: 02, and check that the data is "01".
15) Select page: 6, address: 55, and check the data.
    00 to 7F: Normal
    80 to FF: Defective

Processing after Completing Adjustments:

1) Select page: F, address: DE, set data noted down at step 5) and press the PAUSE button of the adjusting remote commander.
2) Select page: F, address: E3, set data noted down at step 6) and press the PAUSE button.
3) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
4) Select page: 5, address: F1, and set data: 00.
5) Select page: D, address: 63, set data: 00, and press the PAUSE button.
6) Release the data setting performed at step 4). (Refer to page 5-13)
7) Select page: 0, address: 01, and set data: 00.

1-5. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENTS" are satisfied.

Note 1: The back light (fluorescent tube) is driven with high voltage AC power. Therefore, do not touch the back light directly, otherwise you will feel an electric shock.

Note 2: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.

Note 3: Set the LCD BRIGHT to the center.

[Adjusting connector]

Most of the measuring points for adjusting the LCD system are concentrated in CN709 of the SY-58 board.

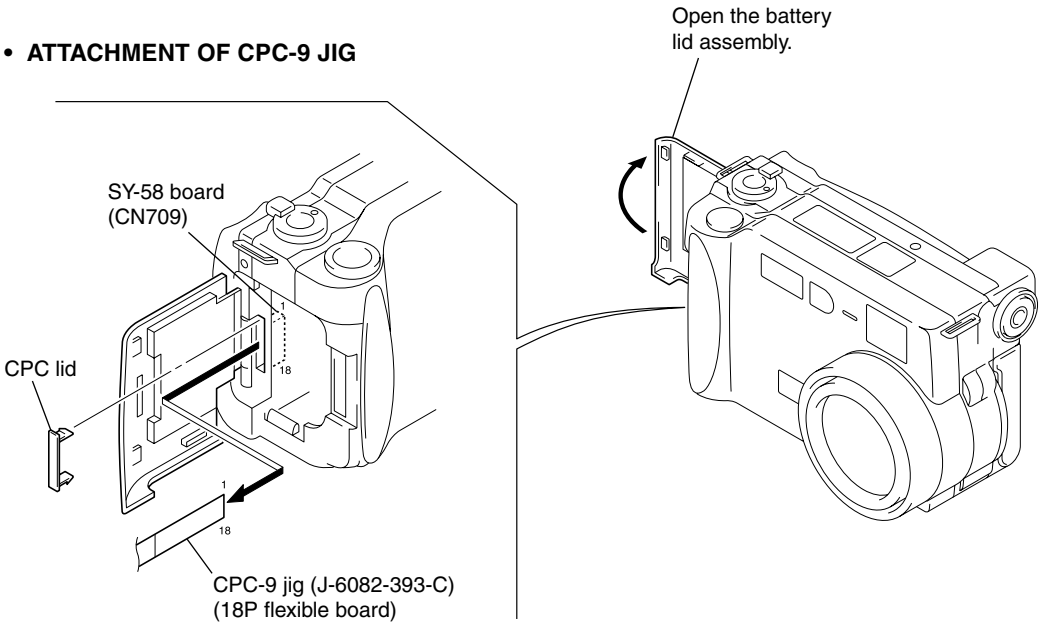
Connect the Measuring Instruments via the CPC-9 jig (J-6082-393-C).

The following table shows the Pin No. and signal name of CN709.

Pin No.	Signal Name	Pin No.	Signal Name
1	N. C.	10	UNREG
2	N. C.	11	LANC IN
3	N. C.	12	LANC OUT
4	REG GND	13	N. C.
5	XCPC_IN	14	RF7
6	N. C.	15	TXD
7	HSY	16	RXD
8	PANEL COM	17	RESET
9	VG	18	VDD

Table 5-1-7

- **ATTACHMENT OF CPC-9 JIG**



Note 1: Don't use the 12 pin flexible board of CPC-9 jig. It causes damage to the unit.

Note 2: In removing the CPC lid, start from the upper side.

Note 3: The old CPC-9 jig (Parts code: J-6082-303-B) cannot be used, because it cannot operate the adjustment remote commander.

Fig. 5-1-19

1. LCD Initial Data Input

Mode	PLAY
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	1C, 1C, D0 to D8, DD to DF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, and enter the data given in the following table.

Note: Press the PAUSE button of the adjusting remote commander each time the data are set, as the data are written to non-volatile memory (EEPROM).

Address	Data	Remark
1C	89	Fixed value
1D	2D	
D0	BC	Bright Adjustment
D1	80	Color Adjustment
D2	B9	White Balance Adjustment
D3	B7	
D4	BE	Contrast Adjustment
D5	C8	D Range Adjustment
D6	7C	V-COM Level Adjustment
D7	80	VCO Adjutment (NTSC)
D8	74	V-COM Adjustment
DD	88	VCO Adjutment (PAL)
DE	13	Fixed value
DF	11	

Processing after Completing Adjustments:
1) Select page: 0, address: 01, and set data: 00.

2. VCO Adjustment (PD-128 Board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑦ of CN709 (HSY) on SY-58 board
Measuring Instrument	Frequency counter
Adjustment Page	D
Specified Value	D7 (NTSC) DD (PAL)
Specified Value	f = 15734 ± 30 Hz (NTSC) f = 15745 ± 30 Hz (PAL)

Menu setting:
1) VIDEO OUT of SET UP menu..... NTSC (NTSC mode) (This adjustment must be performed in NTSC mode, so don't set the menu setting to “PAL”)

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F0, and set data: 01.
3) Select page: D, address: D7, change the data and set the frequency (f) to the NTSC specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: D, address: DD, and change the data and set the frequency (f) to the PAL specified value.
6) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:
1) Select page: 5, address: F0, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

3. D Range Adjustment (PD-128 Board)

Set the D range of the LCD driver to the specified value.
If deviated, the LCD screen will became blackish or saturated (whitish)

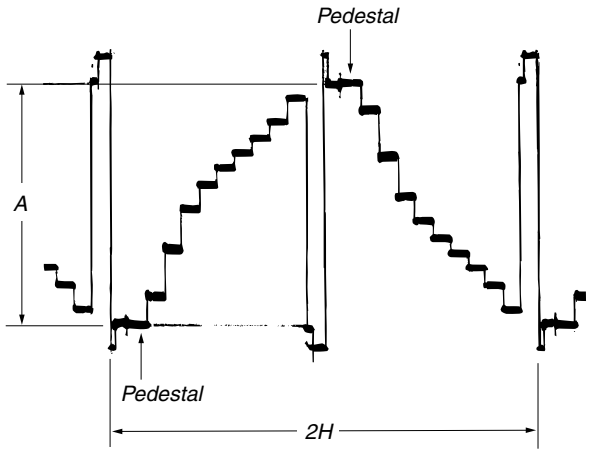
Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN709 (VG) on SY-58 board External trigger: Pin ⑧ of CN709 (PANEL COM) on SY-58 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D5
Specified Value	A = 3.62 ± 0.05 Vp-p

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 03.
3) Select page: D, address: D5, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.



A: Pedestal level difference between 1H period and previous 1H period.

Fig. 5-1-20

4. Bright Adjustment (PD-128 Board)

Set the level of the VIDEO signal for driving the LCD to the specified value.
If deviated, the LCD screen image will be blackish or saturated (whitish).

Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN709 (VG) on SY-58 board External trigger: Pin ⑧ of CN709 (PANEL COM) on SY-58 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D0
Specified Value	A = 1.85 ± 0.08 Vp-p

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 03.
3) Select page: 2, address: 10, and set data: 01.
4) Select page: D, address: D0, change the data and set the voltage (A) between the pedestal and GAMMA 1 limiter level to the specified value.
5) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 2, address: 10, and set data: 00.
3) Select page: 0, address: 01, and set data: 00.

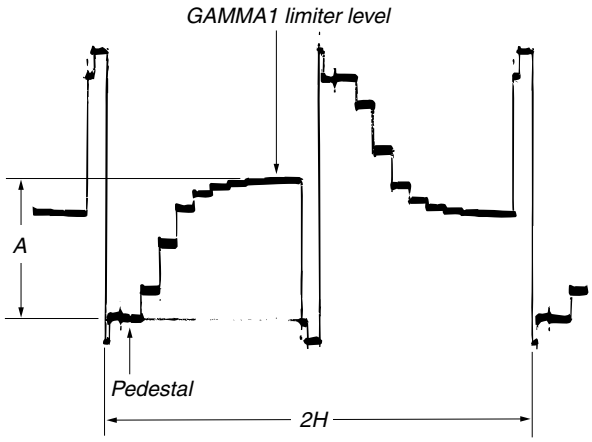


Fig. 5-1-21

5. Contrast Adjustment (PD-128 Board)

Set the level of the VIDEO signal for driving the LCD to the specified value.
If deviated, the LCD screen image will be blackish or saturated (whitish).

Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN709 (VG) on SY-58 board External trigger: Pin ⑧ of CN709 (PANEL COM) on SY-58 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D4
Specified Value	A = 3.31 ± 0.07 Vp-p

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 03.
3) Select page: D, address: D4, change the data and set the voltage (A) between the pedestal and 10 steps peak to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

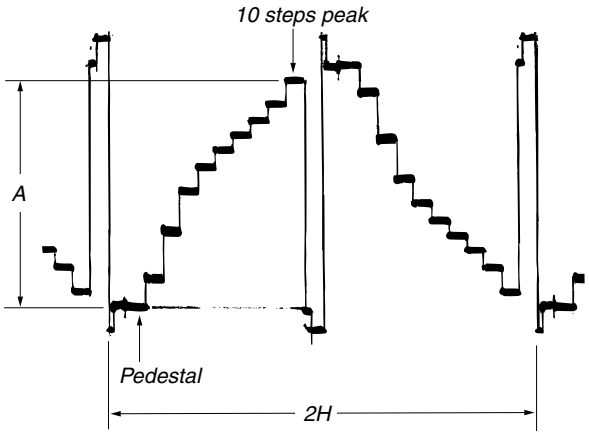


Fig. 5-1-22

6. Color Adjustment (PD-128 Board)

Set the color saturation to the standard value.
If, deviated, the color will be dark or light.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN709 (VG) on SY-58 board External trigger: Pin ⑧ of CN709 (PANEL COM) on SY-58 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D1
Specified Value	A = 544 ± 50 mVp-p

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 04.
3) Select page: D, address: D1, change the data and set the voltage (A) between the white 100% (Reference level) and green to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

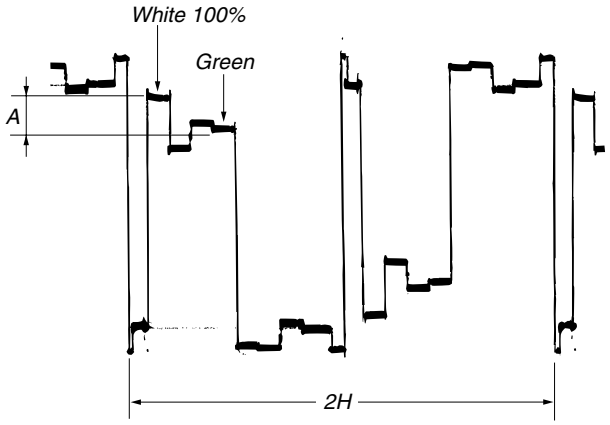


Fig. 5-1-23

7. V-COM Level Adjustment (PD-128 Board)

Set the common electrode drive signal level of LCD to the specified value.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑧ of CN709 (PANEL COM) on SY-58 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D6
Specified Value	A = 6.50 ± 0.05 Vp-p

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 03.
3) Select page: D, address: D6, change the data and set the V-COM signal level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

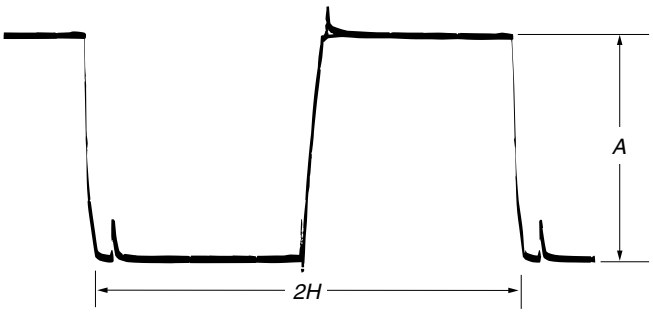


Fig. 5-1-24

8. V-COM Adjustment (PD-128 Board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	D
Adjustment Address	D8
Specified Value	The brightness difference between the section-A and section-B is minimum

Note: Perform “Bright Adjustment” and “Contrast Adjustment” before this adjustment.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 01.
3) Select page: 2, address: 10, and set data: 02.
4) Select page: D, address: D8, change the data so that brightness of the section A and section B is equal.
5) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments:

1) Select page: 5, address: F1, and set data: 00.
2) Select page: 2, address: 10, and set data: 00.
3) Select page: 0, address: 01, and set data: 00.

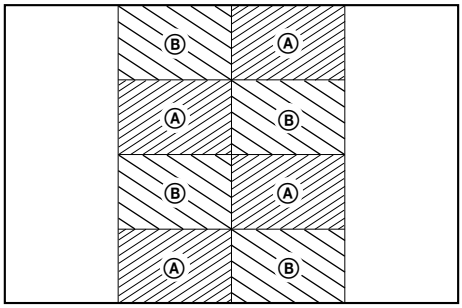


Fig. 5-1-25

9. White Balance Adjustment (PD-128 Board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	D
Adjustment Address	D2, D3
Specified Value	LCD screen must not be colored

Note: Check the white balance only when replacing the following parts.
If necessary, adjust them.

1. LCD panel
2. Light induction plate
3. IC802

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 5, address: F1, and set data: 02.
3) Select page: D, address: D2 and D3, and set the data to the initial value.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.

Address	Data
D2	B9
D3	B7

4) Check that the LCD screen is not colored. If colored, change the data of page: D, address: D2 and D3 so that the LCD screen is not colored.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.
5) Select page: 5, address: F1, and set data: 00.
6) Select page: 0, address: 01, and set data: 00.

1-6. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Battery Down Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of battery will shorten.
The image at the battery end will also be rough.

Mode	STILL
Subject	Arbitrary
Measurement Point	Displayed data of page: 2, address: 51
Measuring Instrument	Adjusting remote commander
Adjustment Page	D
Adjustment Address	90 to 94

Connection:

1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-1-26.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital volt meter display is 7.2 ± 0.1 Vdc.
2) Turn off the power supply.
3) Turn the HOLD switch of the adjusting remote commander.
4) Turn on the power supply.
5) Insert the memory stick to the unit, and set the STILL mode.
6) Set the FOCUS switch in MANUAL mode.
7) Select page: 0, address: 01, and set data: 01.
8) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
9) Select page: 2, address: 51, read the data, and this data is named Dref.
10) Select page: D, address: 90, set data Dref, and then press the PAUSE button of adjusting remote commander.
11) Convert Dref to decimal notation, and obtain Dref'. (Refer to Table 5-2-2. "Hexadecimal-decimal conversion table")
12) Calculate D_{91}', D_{92}', D_{93}' and D_{94}' using following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.

    Address: 91 D_{91}' = Dref'+8
    Address: 92 D_{92}' = Dref'+17
    Address: 93 D_{93}' = Dref'+2C
    Address: 94 D_{94}' = Dref'+37

    Note: After setting each data, be sure to press the PAUSE button.

Processing after Completing Adjustments:

1) Select page: 0, address: 01, and set data: 00.

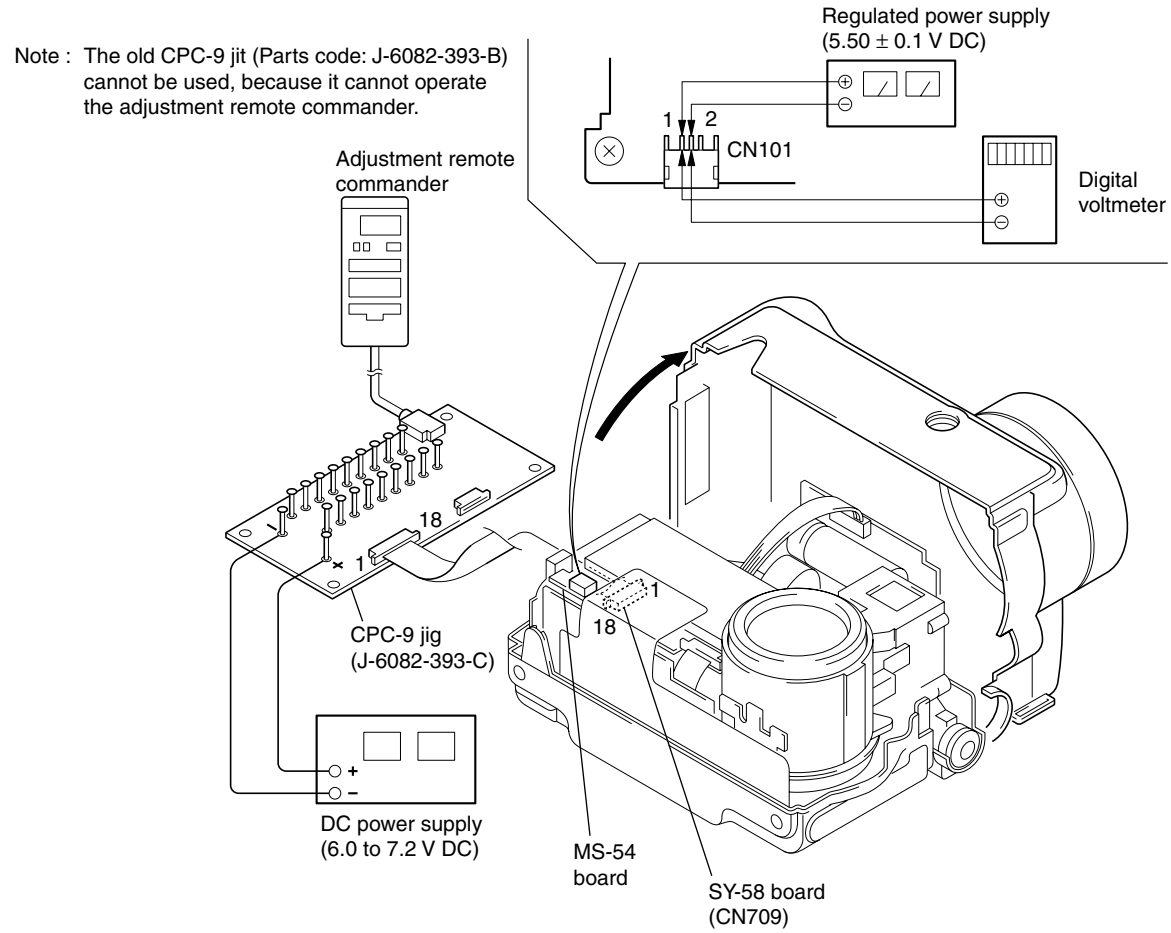


Fig. 5-1-26

5-2. SERVICE MODE

2-1. ADJUSTING REMOTE COMMANDER

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Used Adjusting Remote Commander

1) Connect the adjusting remote commander to the CN709 on the SY-58 board via CPC-9 jig (J-6082-393-C).
2) Adjust the HOLD switch of the adjusting remote commander to “HOLD” (SERVICE position).
3) Turn on the power with the POWER switch of the unit.

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-2-1.

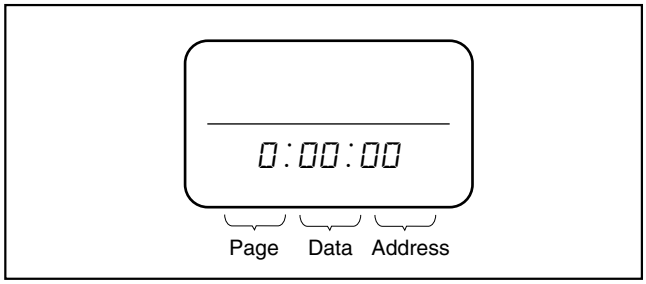


Fig. 5-2-1

4) Operate the adjusting remote commander as follows.
   • Changing the page
   The page increases when the EDIT SEARCH + button is pressed, and decreases when the EDIT SEARCH – button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Table 5-2-1

   • Changing the address
   The address increases when the FF (►►) button is pressed, and decreases when the REW (►►) button is pressed. There are altogether 256 addresses, from 00 to FF.
   • Changing the data (Data setting)
   The data increases when the PLAY (►) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   • Writing the adjustment data
   The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed)

2. Precautions upon Using the Adjusting Remote Commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

2-2. DATA PROCESS

The calculation of the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-2-2. indicates the hexadecimal notation- the decimal notation, calculation table.

Hexadecimal nontation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (R)	B (b)	C (c)	D (d) ②	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (R)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note : ( ) indicate the adjusting remote control unit display.

(Example) In the case that the adjusting remote control unit display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the① and ② in the above table is the decimal notation to be calculated.

Table 5-2-2

2-3. SERVICE MODE

1. Setting the Test Mode

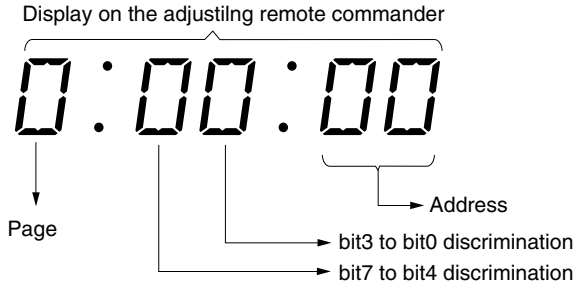
Page D	Address 10

Data	Function
00	Normal
01	Forced STILL mode power ON
02	Forced PLAY mode power ON
03	Forced MOVIE mode power ON

- Before setting the data, select page: 0, address: 01, and set data: 01.
- For page D, the data set is recorded in the non-volatile memory by pressing the PAUSE button of the adjusting remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off.
- After completing adjustments/repairs, be sure to return the data of this address to “00”, and press the PAUSE button of the adjusting remote commander.
  Select page: 0, address: 01, and set data: 00.

2. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for following items. Use the table below to discriminate if the bit value is “1” or “0”



	Display on the Adjusting remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A(R)	1	0	1	0
	B(b)	1	0	1	1
	C(c)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ	E(E)	1	1	1	0
	F(F)	1	1	1	1

Example: If “8E” is displayed on the adjusting remote commander, the bit values for bit7 to bit4 are shown in the Ⓐ column, and the bit values for bit3 to bit0 are shown in the Ⓑ column.

3. Switch Check (1)

Page 2	Address 43

Bit	Function	When bit value=1	When bit value=0
1	SHUTTR SW (Control Switch Block Mode SW)	OFF	ON
2	XSHUTTER LOCK SW (Control Switch Block Mode SW)	OFF	ON

Using method:

1) Select page: 2, address: 43
2) By discriminating the bit value of dispaly data, the state of the switches can be discriminated.

4. Switch Check (2)

Page 2	Address 54 to 57

Using method:
1) Select page: 2, addresses: 54 to 57.
2) By discriminating the dispaly data, the pressed key can be discriminated.

Address	Data						
	00 to 14	15 to 33	3C to 64	65 to 91	92 to BD	BE to E9	EA to FF
55 (KEY AD1) (IC404 ⑦⑧)	CONTROL DOWN (SL-56 board) (S151)	CONTROL UP (SL-56 board) (S151)	DISPLAY (SL-56 board) (S153)	VOLUME/ PROGRAM AE+ (SL-56 board) (S155)	VOLUME/ PROGRAM AE– (SL-56 board) (S157)		
56 (KEY AD2) (IC404 ⑧⓪)	CONTROL RIGHT (SL-56 board) (S151)	CONTROL LEFT (SL-56 board) (S151)	CONTROL SET (SL-56 board) (S151)	FLASH (SL-56 board) (S154)	FOCUS (SL-56 board) (S156)	COLOR LCD ON/OFF (SL-56 board) (S158)	
57 (KEY AD3) (IC404 ⑧①)					PROGRAM AE (SL-56 board) (S152)		

5. LED Check

Page 2	Address 06	Data 02

Using method:
1) Select page: 2, address: 06, and set data: 01.
2) Check that all LED except for the ACCESS LED are lit.
3) Select page: 2, address: 06, and set data: 00.

6. LCD Check

Page 2	Address 06	Data 02

Using method:
1) Select page: 2, address: 05, and set data: 02.
2) Check that all LED are lit and all segments of LCD (display window) are lit.
3) Select page: 2, address: 05, and set data: 00.

SECTION 6
REPAIR PARTS LIST

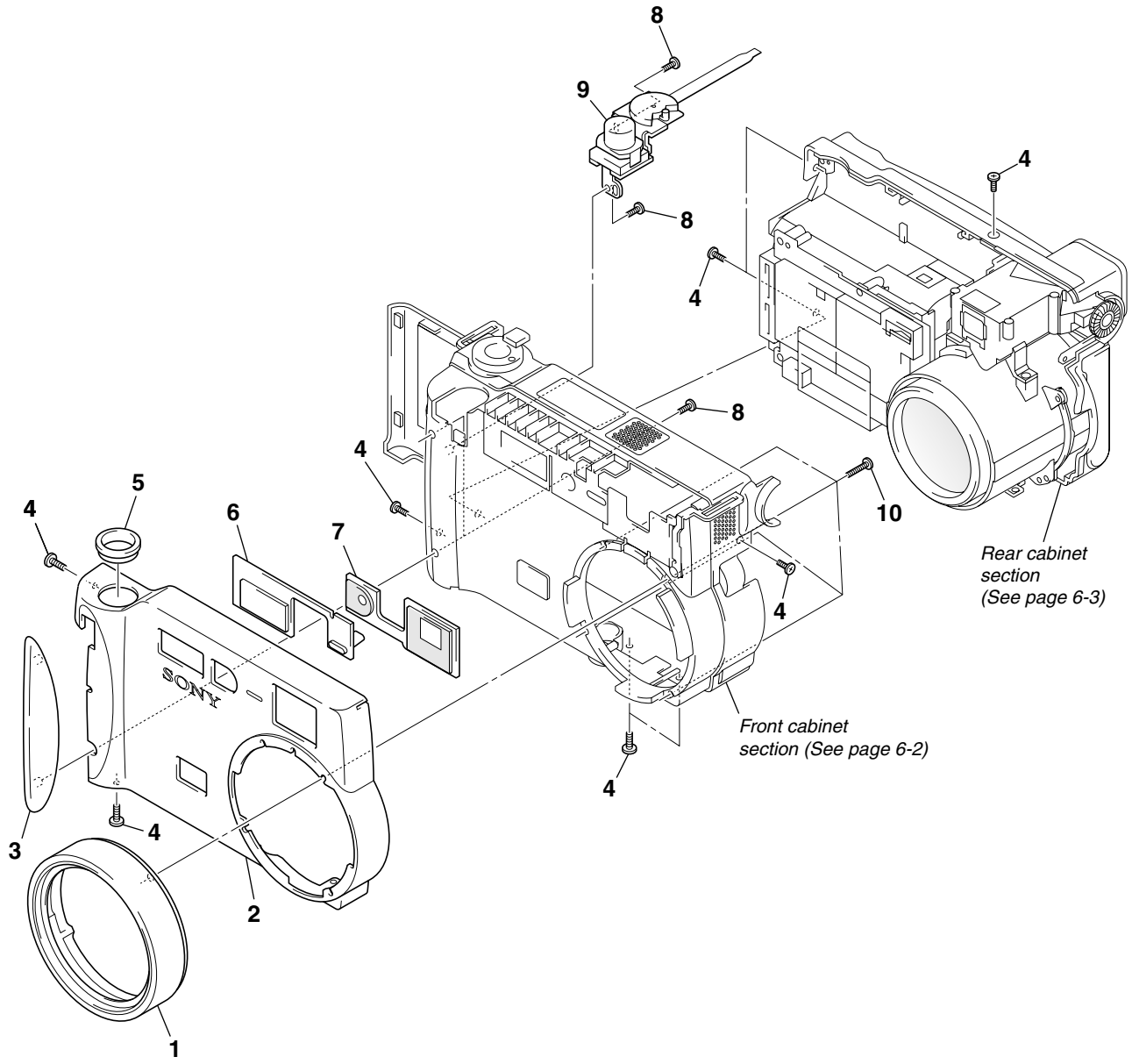
6-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

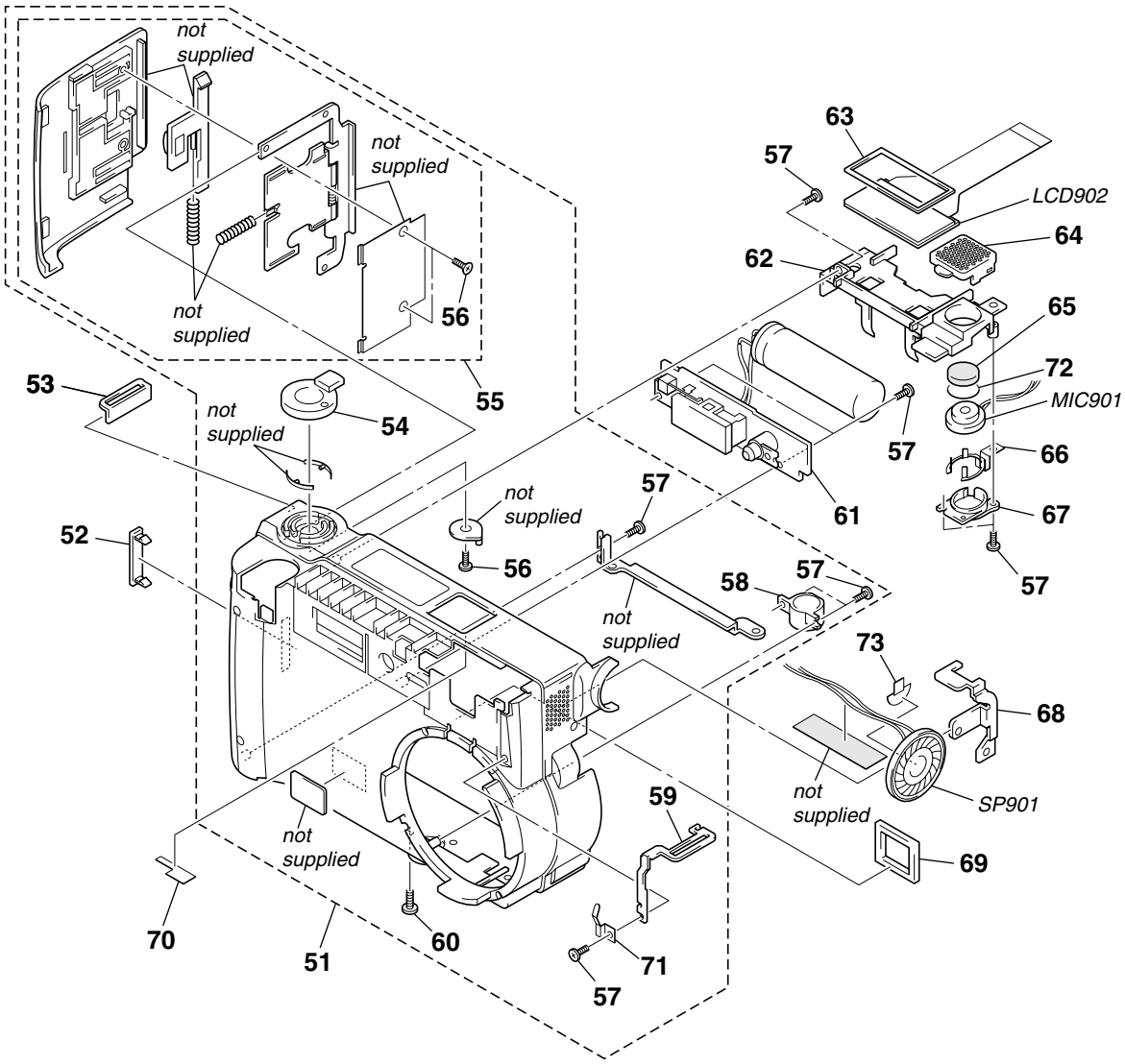
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	3-060-265-01	RING, ORNAMENTAL	
2	3-060-261-02	PANEL (FRONT), ALUMINUM	
3	3-060-262-01	GRIP	
4	3-968-729-71	SCREW (M2), LOCK ACE, P2	
5	3-060-266-01	ESCUTCHEON	
6	3-060-264-01	WINDOW, STROBOSCOPE	
7	3-060-263-01	WINDOW	
8	3-914-366-01	SCREW (DIA. 1.7X4), PRECISION	
9	1-418-985-11	SWITCH BLOCK, CONTROL (MODE SW)	
10	3-060-271-01	SCREW (M1.7X7)	

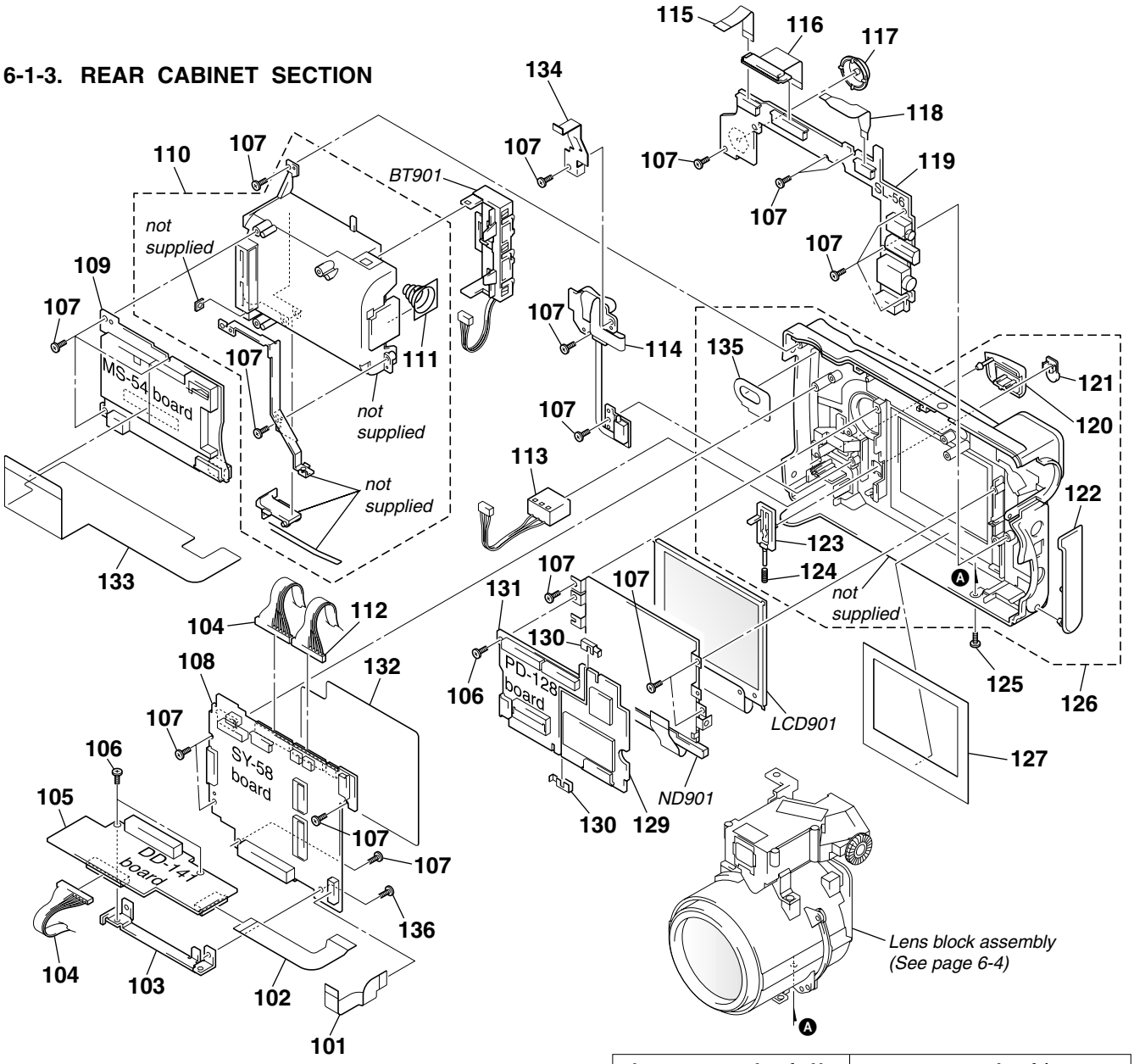
6-1-2. FRONT CABINET SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
51	X-3950-544-2	CABINET (FRONT) ASSY	
52	3-060-251-01	LID, CPC	
53	3-060-267-01	BRACKET (L), STRAP	
54	3-060-275-01	KNOB, MODE	
55	X-3950-546-1	LID ASSY, BATTERY	
56	3-318-382-01	SCREW (1.7X3), TAPPING	
57	3-914-366-01	SCREW (DIA. 1.7X4), PRECISION	
58	3-060-274-01	SCREW, TRIPOD	
59	3-060-279-01	BRACKET (R), STRAP	
60	3-968-729-71	SCREW (M2), LOCK ACE, P2	
⚠61	1-476-005-11	FLASH UNIT	
62	X-3950-545-1	HOLDER ASSY, LCD	
63	3-060-269-01	CUSHION (INDICATION WINDOW)	
64	3-060-268-01	GRILLE, MICROPHONE	
* 65	3-055-971-11	CUSHION, MICROPHONE	
* 66	3-061-237-01	PLATE, MICROPHONE GROUND	
67	3-060-259-01	HOLDER, MICROPHONE	
68	3-060-260-01	HOLDER, SPEAKER	
* 69	3-061-734-02	CUSHION (OVF FRONT)	
* 70	3-061-735-01	SHEET (MIC), ELECTROSTATIC	
* 71	3-062-239-01	PLATE (AF), GROUND	
* 72	3-062-240-02	SHEET (1), SOUND ABSORPTION	
* 73	3-062-689-01	SHEET, SP	
LCD902	1-803-975-21	DISPLAY PANEL, LIQUID CRYSTAL	
MIC901	1-542-428-11	MICROPHONE UNIT	
SP901	1-505-862-31	SPEAKER (2.0 cm)	

6-1-3. REAR CABINET SECTION

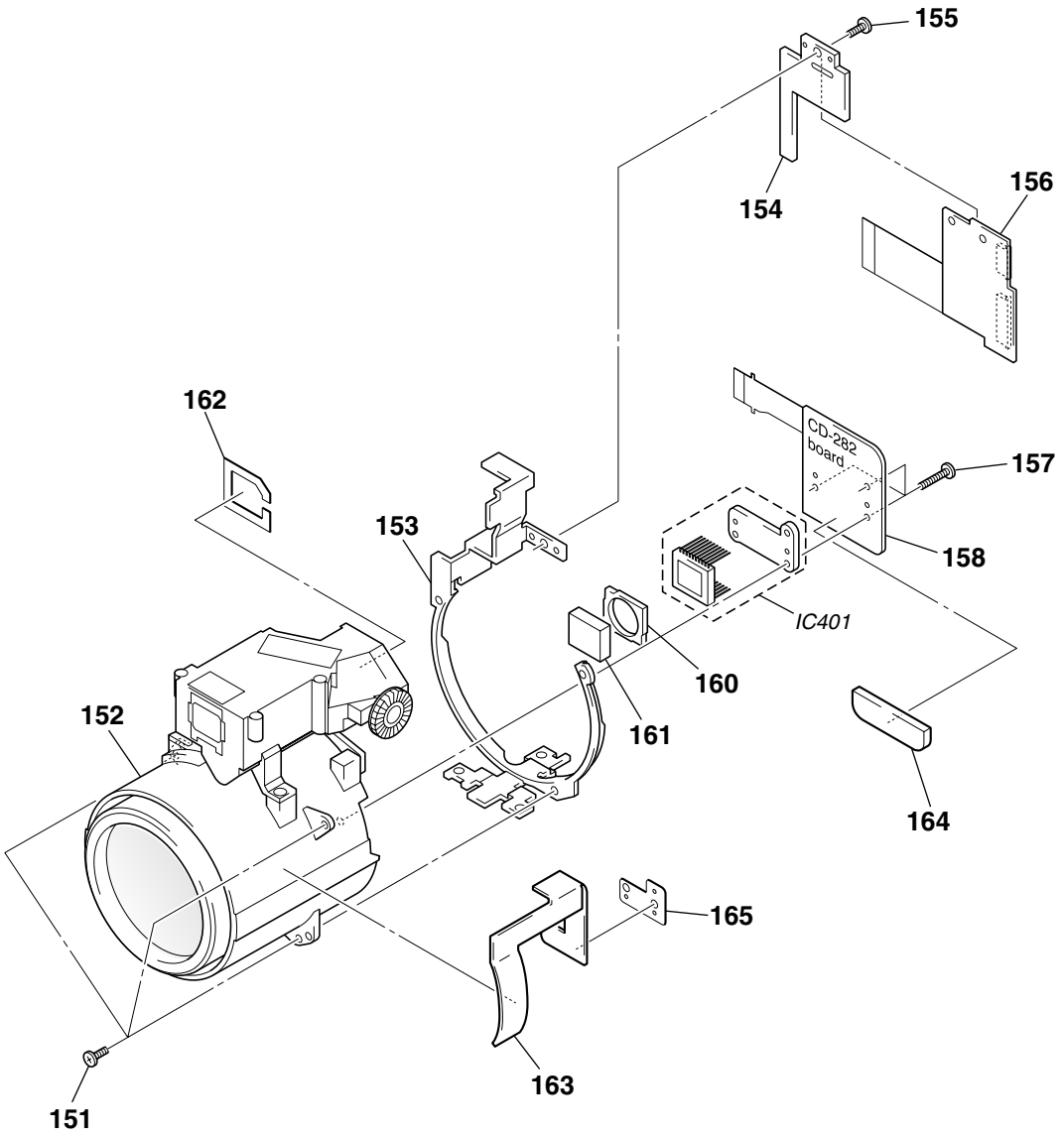


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	1-677-877-11	FP-024 FLEXIBLE BOARD	
102	1-677-879-11	FP-028 FLEXIBLE BOARD	
* 103	3-060-250-01	FRAME, SD	
104	1-960-457-11	HARNESS (YP-052) (14P)	
105	A-7074-360-A	DD-141 BOARD, COMPLETE	
106	3-989-735-51	SCREW (M1.7), LOCK ACE, P2	
107	3-914-366-01	SCREW (DIA. 1.7X4), PRECISION	
108	A-7096-193-A	SY-58 BOARD, COMPLETE (SERVICE)	
109	A-7074-361-A	MS-54 BOARD, COMPLETE	
110	X-3950-543-2	HOLDER ASSY, BT	
111	3-969-380-01	SPRING, BATTERY	
112	1-960-456-11	HARNESS (YP-051) (12P)	
⚠113	1-794-045-11	CONNECTOR, DC-IN	
114	1-418-986-11	SWITCH BLOCK, CONTROL	(ZOOM/POWER SW)
115	1-677-878-11	FP-027 FLEXIBLE BOARD	
116	1-677-881-11	FP-031 FLEXIBLE BOARD	
117	3-061-157-01	BUTTON, FUNCTION	
118	1-677-880-11	FP-029 FLEXIBLE BOARD	
119	A-7074-364-A	SL-56 BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
120	3-060-298-01	COVER, DC	
121	3-060-299-01	KNOB, POWER	
122	3-060-301-01	LID, JK	
123	3-060-297-01	HOLDER, POWER	
124	3-051-520-01	SPRING, POWER	
125	3-968-729-71	SCREW (M2), LOCK ACE, P2	
126	X-3950-548-2	CABINET (REAR) ASSY	
127	3-060-294-01	CUSHION (LCD)	
⚠129	1-418-879-11	TRANSFORMER UNIT, INVERTER	
* 130	3-051-232-01	CLIP, PCB	
131	A-7074-363-A	PD-128 BOARD, COMPLETE	
* 132	3-061-166-01	SHEET, SY	
* 133	3-061-655-01	DD SHEET	
* 134	3-062-431-01	HOOK	
* 135	3-062-337-01	SHEET (ZOOM), ELECTROSTATIC	
136	3-061-216-11	ACE (M1.7), SPECIAL HEAD LOCK	
BT901	1-694-654-11	TERMINAL BOARD, BATTERY	
LCD901	1-803-857-21	INDICATOR MODULE LIQUID CRYSTAL	
⚠ND901	1-517-878-31	TUBE, FLUORESCENT, COLD CATHODE	

6-1-4. LENS BLOCK ASSEMBLY



(Note) Be sure to read “Precuations for Replcement of CCD Imager” on page 4-8 when changing the CCD imager

Ref. No.	Part No.	Description	Remark
151	3-989-735-31	SCREW (M1.7), LOCK ACE, P2	
152	A-7031-106-A	LENS ASSY (VCL-7003XA)	
153	3-060-311-01	FRAME, LENS	
* 154	3-061-362-01	HOLDER, FP	
155	3-054-938-01	SCREW, STEP	
156	1-677-875-21	FP-021 FLEXIBLE BOARD	
157	3-318-203-11	SCREW (B1.7X6), TAPPING	
158	A-7074-362-A	CD-282 BOARD, COMPLETE	
160	3-060-000-01	RUBBER (N), SEAL	
161	1-758-437-11	FILTER BLOCK, OPTICAL	
* 162	3-061-732-01	CUSHION (EYEPIECE WINDOW)	
* 163	3-061-736-01	HEAT SINK, CCD	
* 164	3-062-032-01	CUSHION, LENS	
* 165	3-062-493-01	SHEET, CD	
IC401	A-7031-084-A	CCD BLOCK ASSY (CCD IMAGER)	

6-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Abbreviation
  AUS : Australian model
  CN : Chinese model
  CND : Canadian model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-7074-362-A	CD-282 BOARD, COMPLETE			
		**********			
		(Ref.No.:2, 000 Series)			
		(IC401 is not included in this complete board)			
		< CAPACITOR >			
C401	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C402	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C404	1-104-329-11	CERAMIC CHIP	0.1uF	10%	50V
C405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C406	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C407	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C408	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C409	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C412	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C413	1-125-827-91	CERAMIC CHIP	1uF	10%	25V
C414	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< DIODE >			
D401	8-719-073-01	DIODE MA111- (K8).S0			
		< INDUCTOR >			
FB401	1-414-228-11	INDUCTOR CHIP 0uH			
		< IC >			
IC401	A-7031-084-A	IC CCD BLOCK ASSY (CCD IMAGER)			
		< COIL >			
L401	1-469-058-11	INDUCTOR CHIP 22uH			
		< TRANSISTOR >			
Q401	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q402	8-729-117-73	TRANSISTOR	2SC4178-F13F14-T1		
		< RESISTOR >			
R401	1-218-990-11	SHORT	0		
R402	1-218-990-11	SHORT	0		
R403	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R404	1-218-989-11	RES-CHIP	1M	5%	1/16W
R406	1-218-946-11	RES-CHIP	270	5%	1/16W
R407	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R408	1-218-990-11	SHORT	0		
R409	1-218-977-11	RES-CHIP	100K	5%	1/16W
R412	1-218-990-11	SHORT	0		
		< THERMISTOR >			
TH401	1-809-361-21	THERMISTOR			
	A-7074-360-A	DD-141 (70) BOARD, COMPLETE			
		**********			
		(Ref.No.:1, 000 Series)			
		< CAPACITOR >			
C001	1-164-880-11	CERAMIC CHIP	180PF	5%	16V
C002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C003	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C004	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C005	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C007	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C008	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C009	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C010	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C013	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C014	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C015	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C016	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C017	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C018	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C019	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C020	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C021	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C022	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C023	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C024	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C025	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C026	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C027	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C028	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V

(Note) Be sure to read "Note on the CCD Imager Replacement" on page 4-8 when changing the CCD imager

Ref. No.	Part No.	Description			Remark
C029	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C030	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C031	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C032	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C033	1-125-838-91	CERAMIC CHIP	2.2uF	10%	6.3V
C034	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C035	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C036	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C037	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C038	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C039	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C042	1-125-838-91	CERAMIC CHIP	2.2uF	10%	6.3V
C043	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C044	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C046	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C047	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C048	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C049	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C050	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C051	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C052	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C053	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C054	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C055	1-164-346-11	CERAMIC CHIP	1uF		16V
C803	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C806	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C808	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C809	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C811	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C812	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C813	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C814	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C815	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C816	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C817	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C818	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C819	1-127-569-91	TANTAL. CHIP	100uF	20%	4V
C820	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C851	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C852	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C853	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C854	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C855	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C856	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
CN001	1-785-283-21	PIN, CONNECTOR (PC BOARD) 14P			
CN851	1-766-346-21	CONNECTOR, FFC/FPC 16P			
CN852	1-794-044-21	CONNECTOR, BOARD TO BOARD 80P			
		< DIODE >			
D001	8-719-027-76	DIODE 1SS357-TPH3			
D002	8-719-027-77	DIODE MA796-TX			
D003	8-719-073-01	DIODE MA111- (K8).S0			
D004	8-719-073-01	DIODE MA111- (K8).S0			
D801	8-719-420-14	DIODE MA8082-M (TX)			
		< INDUCTOR >			
FB851	1-414-228-11	INDUCTOR CHIP 0uH			

Ref. No.	Part No.	Description	Remark
		< IC >	
IC001	8-759-060-94	IC MB3785APFV-G-BND-ER	
IC802	8-759-652-45	IC NJM2568V (TE2)	
IC851	8-759-657-69	IC PDIUSBP11APW, 118	
		< COIL >	
L001	1-419-353-21	INDUCTOR 1 0uH	
L002	1-419-353-21	INDUCTOR 1 0uH	
L003	1-416-345-11	INDUCTOR 22uH	
L004	1-416-345-11	INDUCTOR 22uH	
L005	1-412-939-11	INDUCTOR 1uH	
L006	1-419-354-21	INDUCTOR 22uH	
L008	1-412-939-11	INDUCTOR 1uH	
L009	1-412-947-11	INDUCTOR 4.7uH	
L010	1-412-939-11	INDUCTOR 1uH	
L011	1-412-939-11	INDUCTOR 1uH	
L012	1-412-939-11	INDUCTOR 1uH	
L013	1-414-406-11	INDUCTOR 220uH	
L014	1-412-947-11	INDUCTOR 4.7uH	
L801	1-414-756-11	INDUCTOR 47uH	
L802	1-414-754-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q001	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q002	8-729-047-74	TRANSISTOR CPH5701-TL	
Q003	8-729-047-74	TRANSISTOR CPH5701-TL	
Q004	8-729-033-14	TRANSISTOR FP107-TL	
Q005	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q006	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q007	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q008	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q009	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q013	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q014	8-729-037-74	TRANSISTOR UN9213J- (K8).SO	
Q016	8-729-041-23	TRANSISTOR NDS356AP	
Q017	8-729-037-61	TRANSISTOR UN9113J- (K8).SO	
Q018	8-729-037-74	TRANSISTOR UN9213J- (K8).SO	
Q019	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q020	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q021	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q022	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q023	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q024	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q025	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q026	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q027	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q028	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q029	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q030	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q031	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q032	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q033	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q801	8-729-037-74	TRANSISTOR UN9213J- (K8).SO	
Q802	8-729-037-61	TRANSISTOR UN9113J- (K8).SO	
Q805	8-729-037-92	TRANSISTOR 2SD2216J-R (TX).SO	
Q806	8-729-037-52	TRANSISTOR 2SD2216J-QR (K8).SO	
Q807	8-729-037-53	TRANSISTOR 2SB1462J-QR (K8).SO	
Q851	8-729-037-61	TRANSISTOR UN9113J- (K8).SO	
Q852	8-729-042-74	TRANSISTOR UN9216J- (K8).SO	

Ref. No.	Part No.	Description			Remark
Q853	8-729-037-61	TRANSISTOR	UN9113J- (K8).SO		
		< RESISTOR >			
R001	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R002	1-216-864-11	METAL CHIP	0	5%	1/16W
R004	1-218-982-11	RES-CHIP	270K	5%	1/16W
R005	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R006	1-218-878-11	METAL CHIP	20K	0.5%	1/16W
R007	1-208-696-11	METAL CHIP	3.6K	0.5%	1/16W
R008	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R009	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R010	1-218-972-11	RES-CHIP	39K	5%	1/16W
R011	1-218-970-11	RES-CHIP	27K	5%	1/16W
R012	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R013	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R014	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R015	1-218-948-11	METAL CHIP	390	0.5%	1/16W
R016	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R017	1-218-979-11	RES-CHIP	150K	5%	1/16W
R018	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R019	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R020	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R021	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R022	1-218-973-11	RES-CHIP	47K	5%	1/16W
R023	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R024	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R025	1-218-953-11	RES-CHIP	1K	5%	1/16W
R026	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R027	1-218-958-11	METAL CHIP	2.7K	0.5%	1/16W
R028	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R029	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R030	1-218-990-11	SHORT	0		
R031	1-218-990-11	SHORT	0		
R032	1-218-965-11	RES-CHIP	10K	5%	1/16W
R033	1-218-990-11	SHORT	0		
R034	1-218-990-11	SHORT	0		
R035	1-218-949-11	RES-CHIP	470	5%	1/16W
R036	1-218-951-11	RES-CHIP	680	5%	1/16W
R037	1-218-949-11	RES-CHIP	470	5%	1/16W
R038	1-218-949-11	RES-CHIP	470	5%	1/16W
R039	1-208-709-11	METAL CHIP	12K	0.5%	1/16W
R040	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R042	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R043	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R044	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R045	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R046	1-218-937-11	RES-CHIP	47	5%	1/16W
R047	1-218-973-11	RES-CHIP	47K	5%	1/16W
R048	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R049	1-218-973-11	RES-CHIP	47K	5%	1/16W
R050	1-218-965-11	RES-CHIP	10K	5%	1/16W
R051	1-218-849-11	METAL CHIP	3.3K	0.5%	1/16W
R052	1-218-977-11	RES-CHIP	100K	5%	1/16W
R053	1-218-977-11	RES-CHIP	100K	5%	1/16W
R054	1-218-977-11	RES-CHIP	100K	5%	1/16W
R055	1-218-965-11	RES-CHIP	10K	5%	1/16W
R056	1-218-967-11	RES-CHIP	15K	5%	1/16W
R057	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R058	1-218-978-11	METAL CHIP	120K	0.5%	1/16W
R059	1-218-990-11	SHORT	0		
R060	1-218-978-11	METAL CHIP	120K	0.5%	1/16W
R061	1-218-977-11	RES-CHIP	100K	5%	1/16W
R062	1-218-977-11	RES-CHIP	100K	5%	1/16W
R063	1-218-977-11	RES-CHIP	100K	5%	1/16W
R064	1-218-973-11	RES-CHIP	47K	5%	1/16W
R065	1-208-933-11	METAL CHIP	82K	0.5%	1/16W
R066	1-218-977-11	RES-CHIP	100K	5%	1/16W
R067	1-218-973-11	RES-CHIP	47K	5%	1/16W
R068	1-218-977-11	RES-CHIP	100K	5%	1/16W
R069	1-218-965-11	RES-CHIP	10K	5%	1/16W
R070	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R071	1-208-922-11	METAL CHIP	30K	0.5%	1/16W
R072	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R073	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R074	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R075	1-208-688-11	METAL CHIP	1.6K	0.5%	1/16W
R076	1-218-978-11	METAL CHIP	120K	0.5%	1/16W
R078	1-216-864-11	METAL CHIP	0	5%	1/16W
R081	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R801	1-218-990-11	SHORT	0		
R803	1-218-977-11	RES-CHIP	100K	5%	1/16W
R804	1-218-965-11	RES-CHIP	10K	5%	1/16W
R805	1-218-965-11	RES-CHIP	10K	5%	1/16W
R806	1-218-949-11	RES-CHIP	470	5%	1/16W
R807	1-218-989-11	RES-CHIP	1M	5%	1/16W
R808	1-218-973-11	RES-CHIP	47K	5%	1/16W
R809	1-218-965-11	RES-CHIP	10K	5%	1/16W
R810	1-218-939-11	RES-CHIP	68	5%	1/16W
R811	1-218-969-11	RES-CHIP	22K	5%	1/16W
R812	1-218-973-11	RES-CHIP	47K	5%	1/16W
R853	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R854	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R855	1-218-977-11	RES-CHIP	100K	5%	1/16W
R856	1-220-168-11	RES-CHIP	24	5%	1/16W
R857	1-220-168-11	RES-CHIP	24	5%	1/16W
		< TRANSFORMER >			
T001	1-429-565-21	TRANSFORMER, CONVERTER			
	A-7074-361-A	MS-54 BOARD, COMPLETE			
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					(Ref.No.:2, 000 Series)
		< CAPACITOR >			
C003	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C004	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C006	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C007	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
		< CONNECTOR >			
* CN001	1-580-056-21	PIN, CONNECTOR (SMD) 3P			
* CN002	1-580-056-21	PIN, CONNECTOR (SMD) 3P			
CN003	1-766-344-21	CONNECTOR, FFC/FPC 14P			
CN004	1-793-111-14	CONNECTOR, MEMORY STICK			
CN005	1-785-283-21	PIN, CONNECTOR (PC BOARD) 14P			
		< DIODE >			
D001	8-719-073-03	DIODE MA8082- (K8).S0			
D002	8-719-066-44	DIODE CL-270HR-C-TS (ACCESS)			
D003	8-719-073-03	DIODE MA8082- (K8).S0			

Ref. No.	Part No.	Description			Remark
D005	8-719-158-49	DIODE MA8120-TX			
D006	8-719-027-76	DIODE 1SS357-TPH3			
		< FUSE >			
⚠F001	1-576-406-11	FUSE, MICRO 1.4A/32V			
⚠F002	1-576-406-11	FUSE, MICRO 1.4A/32V			
⚠F003	1-576-406-11	FUSE, MICRO 1.4A/32V			
⚠F004	1-576-406-11	FUSE, MICRO 1.4A/32V			
⚠F005	1-576-406-11	FUSE, MICRO 1.4A/32V			
		< INDUCTOR >			
FB001	1-414-228-11	INDUCTOR CHIP 0uH			
FB002	1-414-228-11	INDUCTOR CHIP 0uH			
		< LINE FILTER >			
LF001	1-411-957-11	FILTER, COMMON MODE			
		< TRANSISTOR >			
Q001	8-729-047-68	TRANSISTOR	SSM3K03FE (TPL3)		
Q002	8-729-046-77	TRANSISTOR	SI4963DY-T1		
Q003	8-729-804-41	TRANSISTOR	2SB1122-ST-TD		
Q004	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
		< RESISTOR >			
R001	1-216-821-11	METAL CHIP	1K	5%	1/16W
R002	1-216-821-11	METAL CHIP	1K	5%	1/16W
R003	1-216-853-11	METAL CHIP	470K	5%	1/16W
R004	1-216-857-11	METAL CHIP	1M	5%	1/16W
R005	1-216-150-91	RES-CHIP	10	5%	1/8W
R006	1-216-821-11	METAL CHIP	1K	5%	1/16W
R007	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R009	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7074-363-A PD-128 BOARD, COMPLETE

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(Ref.No.:2, 000 Series)

		< CAPACITOR >			
C801	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C802	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C803	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C804	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C805	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C806	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C807	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C808	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C811	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C812	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C813	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C814	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C815	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C816	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C817	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C818	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C819	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C902	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V
C903	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C904	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C905	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C906	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C907	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C908	1-164-872-11	CERAMIC CHIP	82PF	5%	16V
C909	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C911	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C912	1-164-872-11	CERAMIC CHIP	82PF	5%	16V
C913	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C914	1-113-994-11	TANTAL. CHIP	6.8uF	20%	16V
C915	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C916	1-107-689-21	TANTAL. CHIP	1uF	20%	35V
C917	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C918	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
		< CONNECTOR >			
CN801	1-779-064-11	PIN, CONNECTOR (PC BOARD) 12P			
CN802	1-785-283-21	PIN, CONNECTOR (PC BOARD) 14P			
* CN901	1-774-261-11	CONNECTOR, FFC (ZIF) 24P			
		< DIODE >			
D801	8-719-073-01	DIODE MA111- (K8).S0			
D902	8-713-102-80	DIODE 1T369-01-T8A			
D903	8-719-976-96	DIODE MA8047-H-TX			
		< INDUCTOR >			
FB801	1-414-234-22	INDUCTOR CHIP 0uH			
FB802	1-414-234-22	INDUCTOR CHIP 0uH			
FB803	1-414-234-22	INDUCTOR CHIP 0uH			
		< IC >			
IC801	8-759-364-05	IC MB40D001PFV-G-BND-ER			
IC802	8-759-539-27	IC IR3Y37A4			
IC901	8-759-587-61	IC LZ9GH234			
IC902	8-759-327-01	IC NJM062V (TE2)			
		< COIL >			
L801	1-414-757-11	INDUCTOR	10 0uH		
L802	1-414-078-11	INDUCTOR	1 0uH		
L803	1-412-947-11	INDUCTOR	4.7uH		
L901	1-414-754-11	INDUCTOR	1 0uH		
L902	1-414-754-11	INDUCTOR	1 0uH		
L903	1-412-951-11	INDUCTOR	1 0uH		
L905	1-412-949-21	INDUCTOR	6.8uH		
		< TRANSISTOR >			
Q901	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q902	8-729-037-53	TRANSISTOR	2SB1462J-QR (K8).SO		
Q903	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q904	8-729-037-53	TRANSISTOR	2SB1462J-QR (K8).SO		
		< RESISTOR >			
R803	1-218-990-11	SHORT	0		
R805	1-218-990-11	SHORT	0		
R808	1-218-969-11	RES-CHIP	22K	5%	1/16W
R809	1-218-966-11	RES-CHIP	12K	5%	1/16W
R810	1-218-990-11	SHORT	0		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R812	1-218-973-11	RES-CHIP	47K	5%	1/16W
R813	1-218-967-11	RES-CHIP	15K	5%	1/16W
R814	1-218-971-11	RES-CHIP	33K	5%	1/16W
R817	1-218-966-11	RES-CHIP	12K	5%	1/16W
R818	1-218-972-11	RES-CHIP	39K	5%	1/16W
R820	1-218-977-11	RES-CHIP	100K	5%	1/16W
R821	1-218-965-11	RES-CHIP	10K	5%	1/16W
R904	1-218-973-11	RES-CHIP	47K	5%	1/16W
R905	1-218-973-11	RES-CHIP	47K	5%	1/16W
R908	1-218-987-11	RES-CHIP	680K	5%	1/16W
R909	1-218-979-11	RES-CHIP	150K	5%	1/16W
			(J, CND, UK, E, HK, AUS, CN, KR, JE)		
R909	1-218-978-11	RES-CHIP	120K	5%	1/16W
					(US, AEP)
R910	1-218-977-11	RES-CHIP	100K	5%	1/16W
R911	1-218-965-11	RES-CHIP	10K	5%	1/16W
R912	1-218-989-11	RES-CHIP	1M	5%	1/16W
R913	1-218-990-11	SHORT	0		
R914	1-218-989-11	RES-CHIP	1M	5%	1/16W
R915	1-218-969-11	RES-CHIP	22K	5%	1/16W
R916	1-218-975-11	RES-CHIP	68K	5%	1/16W
R917	1-218-975-11	RES-CHIP	68K	5%	1/16W
R918	1-218-973-11	RES-CHIP	47K	5%	1/16W
R919	1-218-891-11	METAL CHIP	68K	0.5%	1/16W
R920	1-218-883-11	METAL CHIP	33K	0.5%	1/16W
R921	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R922	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R925	1-218-977-11	RES-CHIP	100K	5%	1/16W
R926	1-218-971-11	RES-CHIP	33K	5%	1/16W
R928	1-218-977-11	RES-CHIP	100K	5%	1/16W
R929	1-218-977-11	RES-CHIP	100K	5%	1/16W
R932	1-218-977-11	RES-CHIP	100K	5%	1/16W
R933	1-218-971-11	RES-CHIP	33K	5%	1/16W
R934	1-218-990-11	SHORT	0		
R935	1-218-883-11	METAL CHIP	33K	0.5%	1/16W
R936	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R937	1-218-883-11	METAL CHIP	33K	0.5%	1/16W
R938	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R960	1-218-937-11	RES-CHIP	47	5%	1/16W
R961	1-218-937-11	RES-CHIP	47	5%	1/16W
R962	1-218-937-11	RES-CHIP	47	5%	1/16W

A-7074-364-A SL-56 BOARD, COMPLETE

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(Ref.No.:2, 000 Series)

< BATTERY >

⚠BT151 1-528-999-11 BATTERY, LITHIUM SECONDARY

< CAPACITOR >

C151	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C251	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C252	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C253	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C255	1-164-874-11	CERAMIC CHIP	100PF	5%	16V
C301	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN151	1-691-371-21	CONNECTOR, FFC/FPC 7P	
CN251	1-779-332-11	CONNECTOR, FFC/FPC 16P	
CN252	1-794-335-11	CONNECTOR (USB) (4P), SQUARE	
CN301	1-766-339-21	CONNECTOR, FFC/FPC 9P	
CN302	1-691-360-11	CONNECTOR, FFC/FPC (ZIF) 22P	
		< DIODE >	
D151	8-719-073-01	DIODE MA111- (K8).S0	
D152	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D153	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D154	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D251	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D253	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D255	8-719-073-01	DIODE MA111- (K8).S0	
D256	8-719-073-01	DIODE MA111- (K8).S0	
D257	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D259	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D260	8-719-073-01	DIODE MA111- (K8).S0	
D261	8-719-159-96	DIODE RD5.1UM-T1B	
D262	8-719-159-96	DIODE RD5.1UM-T1B	
D263	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D264	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D265	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D266	8-719-045-87	DIODE MA4Z082WA- (TX).SO	
D301	8-719-060-92	DIODE SML-311YTT86 (STROB)	
D302	8-719-074-30	DIODE SML-310LTT86 (TARRY)	
D303	8-719-063-83	DIODE SML-310MTT86 (AE LOCK)	
		< INDUCTOR >	
FB251	1-500-284-21	INDUCTOR CHIP 0uH	
FB252	1-500-284-21	INDUCTOR CHIP 0uH	
FB253	1-500-284-21	INDUCTOR CHIP 0uH	
FB254	1-500-284-21	INDUCTOR CHIP 0uH	
FB255	1-500-284-21	INDUCTOR CHIP 0uH	
FB301	1-414-228-11	INDUCTOR CHIP 0uH	
		< IC >	
IC301	8-759-573-02	IC BU9735K-E2	
		< JACK >	
J251	1-695-514-31	JACK (SMALL TYPE) 1P (A/V OUT)	
J252	1-793-995-21	JACK, SUPER SMALL TYPE (EXT FLASH)	
		< LINE FILTER >	
LF001	1-419-100-21	COIL, COMMON-MODE CHOKE	
LF002	1-419-100-21	COIL, COMMON-MODE CHOKE	
LF003	1-419-100-21	COIL, COMMON-MODE CHOKE	
LF004	1-419-100-21	COIL, COMMON-MODE CHOKE	
		< RESISTOR >	

R152	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R153	1-218-967-11	RES-CHIP	15K	5%	1/16W
R155	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R158	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R159	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R160	1-218-961-11	RES-CHIP	4.7K	5%	1/16W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R161	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R162	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R163	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R164	1-218-971-11	RES-CHIP	33K	5%	1/16W
R251	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R252	1-218-953-11	RES-CHIP	1K	5%	1/16W
R253	1-218-977-11	RES-CHIP	100K	5%	1/16W
R256	1-218-989-11	RES-CHIP	1M	5%	1/16W
R262	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R263	1-218-985-11	RES-CHIP	470K	5%	1/16W
R264	1-218-990-11	SHORT	0		
R301	1-218-949-11	RES-CHIP	470	5%	1/16W
R302	1-218-949-11	RES-CHIP	470	5%	1/16W
R303	1-218-945-11	RES-CHIP	220	5%	1/16W
R304	1-218-987-11	RES-CHIP	680K	5%	1/16W
R305	1-218-977-11	RES-CHIP	100K	5%	1/16W
R306	1-218-977-11	RES-CHIP	100K	5%	1/16W
		< SWITCH >			
S151	1-771-688-21	SWITCH, TACTILE (CONTROL BUTTON)			
S152	1-771-138-61	SWITCH, KEY BOARD (PROGRAM AE)			
S153	1-771-138-61	SWITCH, KEY BOARD (DISPLAY)			
S154	1-771-138-61	SWITCH, KEY BOARD (FLASH)			
S155	1-771-138-61	SWITCH, KEY BOARD (VOLUME/PROGRAM AE +)			
S156	1-771-138-61	SWITCH, KEY BOARD (FOCUS)			
S157	1-771-138-61	SWITCH, KEY BOARD (VOLUME/PROGRAM AE -)			
S158	1-771-138-61	SWITCH, KEY BOARD (LCD BACK LIGHT)			
		MISCELLANEOUS			
		**********			
9	1-418-985-11	SWITCH BLOCK, CONTROL (MODE SW)			
⚠61	1-476-005-11	FLASH UNIT			
101	1-677-877-11	FP-024 FLEXIBLE BOARD			
102	1-677-879-11	FP-028 FLEXIBLE BOARD			
104	1-960-457-11	HARNESS (YP-052) (14P)			
112	1-960-456-11	HARNESS (YP-051) (12P)			
⚠113	1-794-045-11	CONNECTOR, DC-IN			
114	1-418-986-11	SWITCH BLOCK, CONTROL (ZOOM/POWER SW)			
115	1-677-878-11	FP-027 FLEXIBLE BOARD			
116	1-677-881-11	FP-031 FLEXIBLE BOARD			
118	1-677-880-11	FP-029 FLEXIBLE BOARD			
⚠129	1-418-879-11	TRANSFORMER UNIT, INVERTER			
152	A-7031-106-A	LENS ASSY (VCL-7003XA)			
156	1-677-875-21	FP-021 FLEXIBLE BOARD			
161	1-758-437-11	FILTER BLOCK, OPTICAL			
BT901	1-694-654-11	TERMINAL BOARD, BATTERY			
IC401	A-7031-084-A	CCD BLOCK ASSY (CCD IMAGER)			
SP901	1-505-862-31	SPEAKER (2.0 cm)			
LCD901	1-803-857-21	INDICATOR MODULE LIQUID CRYSTAL			
LCD902	1-803-975-21	DISPLAY PANEL, LIQUID CRYSTAL			
⚠ND901	1-517-878-31	TUBE, FLUORESCENT, COLD CATHODE			
MIC901	1-542-428-11	MICROPHONE UNIT			

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		**********	
⚠	1-475-599-11	ADAPTOR, AC (EXCEPT KR)	
⚠	1-475-599-71	ADAPTOR, AC (KR)	
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (E)	
⚠	1-696-819-11	CORD, POWER (AUS)	
⚠	1-769-608-11	CORD, POWER (AEP, E)	
⚠	1-776-985-11	CORD, POWER (KR)	
⚠	1-782-476-11	CORD, POWER (CN)	
⚠	1-783-374-11	CORD, POWER (UK, HK)	
	1-783-738-31	CORD, CONNECTION (A/V connecting cable 1.5m)	
⚠	1-790-073-11	CORD, POWER 2P (J, JE)	
⚠	1-790-107-22	CORD, POWER (US, CND)	
	1-791-785-11	CORD, CONNECTION (USB CABLE) (J)	
	1-792-623-11	CABLE, USB (EXCEPT J)	
	3-060-522-01	MANUAL, INSTRUCTION (JAPANESE) (J)	
	3-060-522-11	MANUAL, INSTRUCTION (ENGLISH) (US, CND, AEP, UK, E, HK, AUS, CN, JE)	
	3-060-522-21	MANUAL, INSTRUCTION (FRENCH, GERMAN) (CND, AEP, JE)	
	3-060-522-31	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE) (AEP, E, JE)	
	3-060-522-41	MANUAL, INSTRUCTION (ITALIAN, DUTCH) (AEP)	
	3-060-522-51	MANUAL, INSTRUCTION (CHINESE) (E, HK, CN, JE)	
	3-060-522-61	MANUAL, INSTRUCTION (RUSSIAN, SWEDISH) (AEP, JE)	
	3-060-522-71	MANUAL, INSTRUCTION (ARABIC) (E)	
	3-060-522-81	MANUAL, INSTRUCTION (KOREAN) (KR, JE)	
	3-060-716-01	SOFT (2000), BUNDLE	
	3-061-217-01	STRING, CAP	
	3-866-482-01	MANUAL, INSTRUCTION (for SAFETY) (JAPANESE) (J)	
	3-987-015-01	BELT (S), SHOULDER	
	X-3950-542-2	CAP ASSY, LENS	

(Note) Be sure to read "Precautions for Replcement of CCD Imager" on page 4-8 when changing the CCD imager

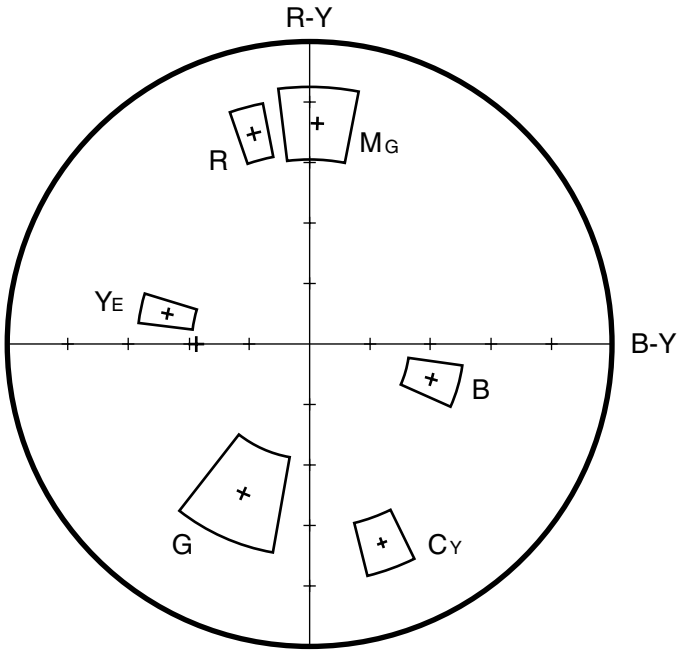
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

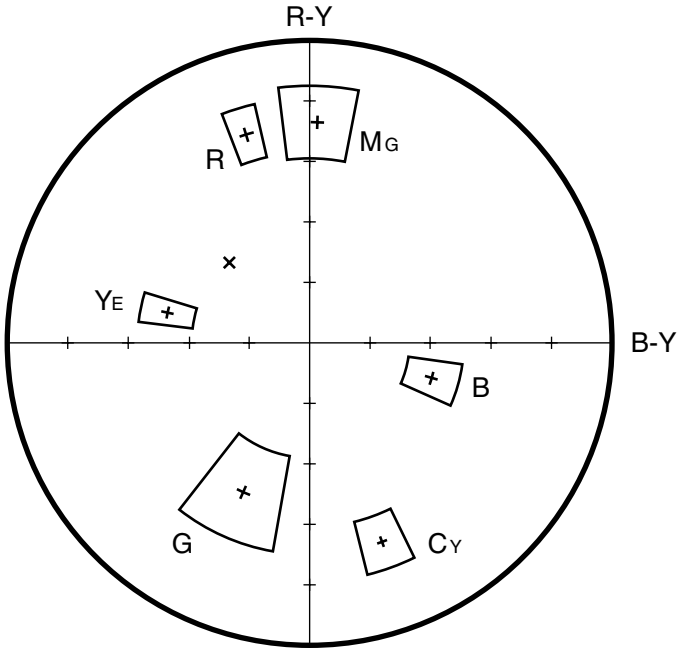
Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

For NTSC mode



DSC-S70

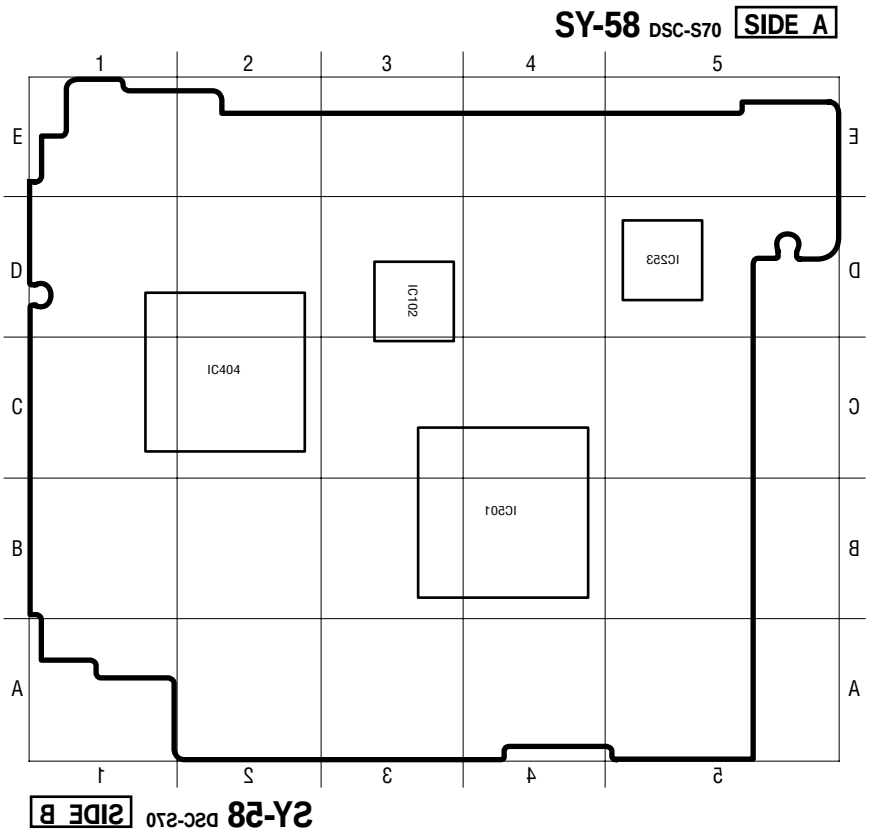
For PAL mode



DSC-S70

< PARTS REFERENCE SHEET >

You can find the parts position of mount locations applying to SY-58 board of a set.



9-929-814-31

Sony Corporation
Personal VIDEO Products Company

2000C0549-1
Printed in Japan © 2000. 3
Published by Safety & Service Engineering Dept.